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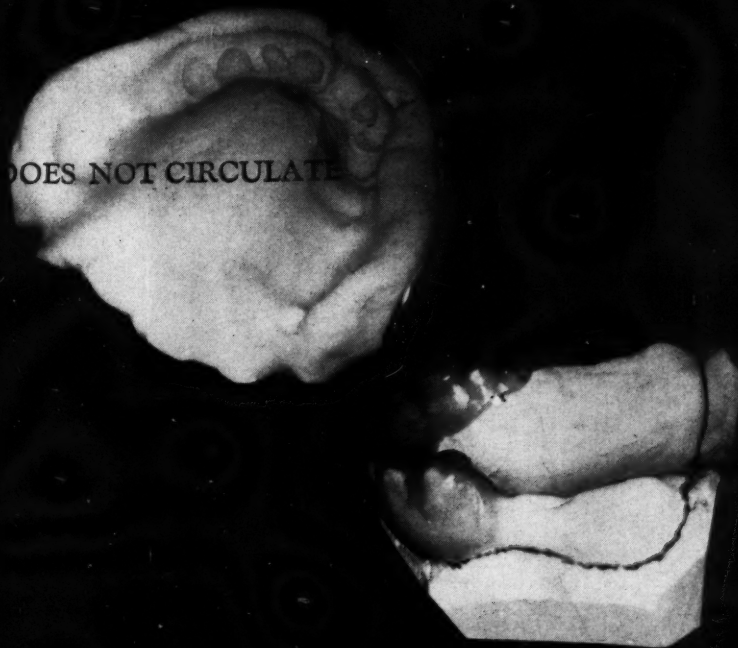
IN THIS ISSUE

Immediate Denture Impressions with Rubber Base Materials	298
Managing the Fractured Tooth with Jacket Crown	304
Vitamins and Dentistry for Handicapped Children	305
Fluorine in Pregnancy	305
Clinical Problems Related to the Tongue	306
Successful Treatment of Infected Pulpless Teeth and Periapical Disease with Terramycin®	312
The Effectiveness of the Steroid, 9-Alpha-fluorohydrocortisone Acetate in the Treatment of Viral Disease and Other Minor Lesions of the Oral Cavity	314
Clinical and Laboratory Suggestions	318
Extra-Angles	326
Medicine and the Biologic Sciences	321

(A Complete Table of Contents
Appears on page 297)

Cover illustration—
Yurkstas-Kapur article, page 298

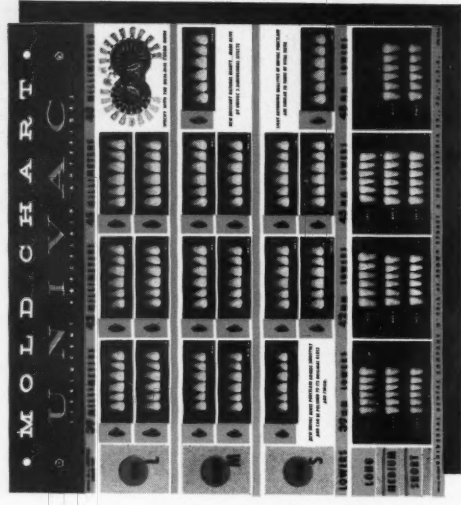
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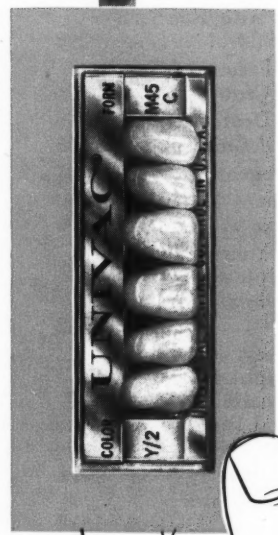
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Immediate Denture Impressions with Rubber Base Materials

A. Albert Yurkstas, B.S., M.S., D.M.D.
and Krishan K. Kapur, B.S., M.S., B.D.S. 298

Managing the Fractured Tooth with Jacket Crown

Irving H. Goldstein, D.D.S. 304

Vitamins and Dentistry for Handicapped Children (An Abstract) 305

Fluorine in Pregnancy (An Abstract) 305

Clinical Problems Related to the Tongue

E. Cheraskin, M.D., D.M.D., and Robert T. Binford, Jr., D.M.D. 306

Precancerous Skin Lesions (An Abstract) 311

Successful Treatment of Infected Pulpless Teeth

and Periapical Disease with Terramycin®
Krishna C. Ramnarine, B.A., D.D.S. 312

Development of the Study of Disease (An Abstract) 313

The Effectiveness of the Steroid, 9-Alpha-fludrohydrocortisone Acetate in the Treatment of Viral Disease and other Minor Lesions of the Oral Cavity

Captain Harry L. Levin (DC), USNR 314

Clinical and Laboratory Suggestions 318

1. Determination of the Posterior Border of a Denture. 2. A Laboratory Knife. 3. A Test Preparatory to Placing Silicate. 4. Storing Impressions. 5. Dissolving Plaster and Investment Material. 6. Needle Dropper for Applying Cavity Lining.

The Editor's Page 320 Contra-Angles 326

Medicine and the Biologic Sciences 321

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histopathology. Captain Levin has an impressive list of publications on various aspects of dentistry to his credit. For his first appearance in DIGEST he presents THE

EFFECTIVENESS OF THE STEROID, 9-ALPHA-FLUDROHYDROCORTISONE ACETATE IN THE TREATMENT OF VIRAL DISEASE AND OTHER MINOR LESIONS OF THE ORAL CAVITY.

IMMEDIATE DENTURE IMPRESSIONS

with Rubber Base Materials*

A. ALBERT YURKSTAS, B.S., M.S., D.M.D., and KRISHAN K. KAPUR, B.S., M.S., B.D.S., Boston

DIGEST

A recent innovation in elastic impression materials is a synthetic rubber which sets or vulcanizes while in contact with the oral tissues. Extreme accuracy and stability is claimed for the material by its manufacturers. The essential ingredient is a "poly-functional"¹ mercaptane. This composes the base material and is commercially known as Thio-col.[®] Usually it is supplied as a white paste. The base material has a sulfur-hydrogen terminal that is extremely active. Polymerization or "set" of the material can be brought about by specific activators to produce a stable synthetic rubber. Several sulfur and peroxide compounds are used as activators, a common one being lead.¹

Factors Involved in Clinical Application of Material

There are certain advantages and disadvantages in the clinical application of this material. Table I presents a subjective comparison between the three of the most commonly used elastic impression materials.

Special Trays Required—A 1 to 3-millimeter layer of impression material seems to result in the most accurate impressions.¹ Too thick or too thin a section results in failure. Special trays, must, therefore, be prepared to assure that the correct thick-

ness of material is secured, and that the impression material is placed and supported during impression-making procedures.

Factors Influencing Time Required—Manipulation of the material is best accomplished according to the manufacturer's directions. Generally, there seems to be 2 to 5 minutes available for the mixing and for loading the tray, and from 4 to 10 minutes available for setting time in the mouth. Increase or decrease in the amount of activator paste used seems to have little effect on the setting time.¹ A poor impression may result from a misproportioning of the material. Humidity seems to be the prime factor regarding setting time; temperature has the next most important influence.

Problem of Distortion—The lack of distortion of the impression over a long time span has been suggested by the manufacturers. This however must be questioned, if only to comment that it does not seem likely that an impression will become any more accurate by remaining on a laboratory bench. It must also be remembered that the materials used for trays, whether shellac, compound, or resin, are not absolutely free from dimensional changes. To ensure freedom from distortion, the impression should be poured immediately.

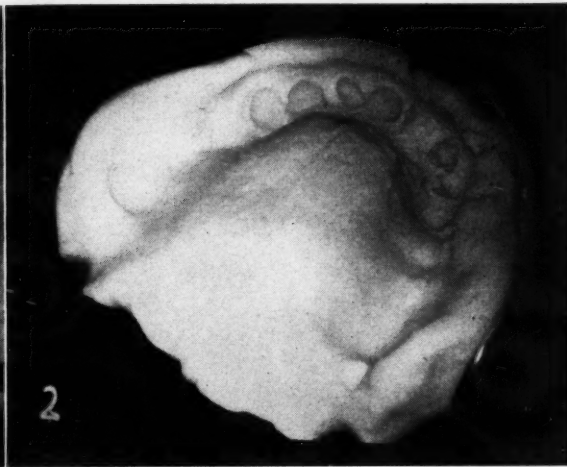
Method to Ensure Adherence to Tray—It is important that the impression material is made to adhere intimately to the tray. This can be best accomplished by perforation of the impression tray or more conveniently by the use of a cementing substance supplied by the manufacturers. A combination of both methods seems most desirable.

TABLE I.

FACTOR	MATERIAL		
	Alginate	Hydrocolloid	Rubber
Elastic Properties	Fair	Good	Good
Storage Qualities	Poor	Fair	Good
Accuracy	Good	Good	Good
Ease of Handling	Good	Fair	Fair
Sharpness of Detail	Fair	Good	Good
Resistance to Tearing	Poor	Fair	Good
Palatability and Flavor	Good	Good	Poor
Versatility	Fair	Fair	Good
Impressions in Thin Section	Poor	Fair	Good
Flow	Good	Good	Good
Time Temperature			
Control of Setting	Good	Good	Poor

¹Skinner, E. W., and Cooper, E. N.: Desirable Properties and Use of Rubber Impression Materials, JADA 51:523-536 (November) 1955.

*From Tufts University School of Dental Medicine.



1. Clinical appearance of patient for immediate upper denture. 2. Preliminary alginate impression in a stock tray.

Variety of Materials Available

Many types of rubber base impression materials are on the market. Their chief difference is in the overall body or consistency of the material. It is generally conceded unwise to attempt impressions of soft tissues with a heavy bodied material, since displacement of underlying tissues will probably result. It is recommended that a free flowing or light bodied paste be employed for edentulous or partly edentulous areas.

Method Derived from Several Sources

Many descriptions of methods for

obtaining impressions for the construction of immediate dentures have been published. Stiker² has described a hydrocolloid method; Hardy³, a sectional impression technique; Martin⁴ a sectional alginate and compound technique; Sommer⁵, and Appleby⁶, an alginate technique using special trays; Applegate⁷, a wax technique;

and Hughes⁸ has described a metallic oxide and alginate sectional impression. The authors do not suggest that this technique is original, rather it is a combination of methods derived from the sources previously listed and others.

Basic Factors Involved

This discussion does not deal with indications or contraindications for immediate denture construction nor advantages or disadvantages of various other methods available. Certain fundamentals are adhered to by most prosthodontists and have been adequately described by Appleby⁶. These

²Stiker, A. G.: Simplified Immediate Denture Impression, *DENTAL DIGEST* 42:86-87 (March) 1936.

³Hardy, I. R.: Immediate Maxillary Dentures, *DENTAL DIGEST* 41:50-56 (February) 1935.

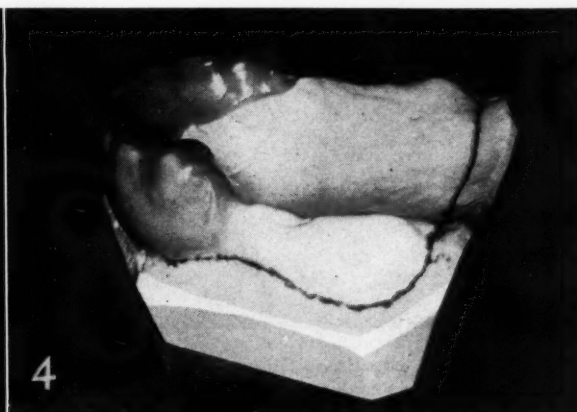
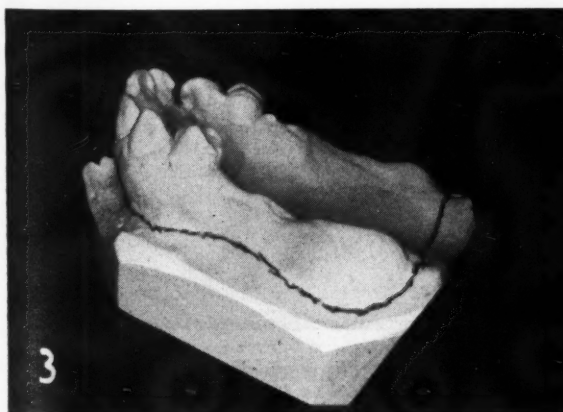
⁴Martin, B. A.: Immediate Denture Impression, *DENTAL DIGEST* 56:154-158 (April) 1950.

⁵Sommer, J.: Technic for Obtaining a Good Impression for an Immediate Full Denture, *JADA* 40:376 (March) 1950.

⁶Appleby, Ralph C., and Kirchoff, Wayne F.: Immediate Maxillary Denture Impression, *J. Pros. Dent.* 5:443-45 (July) 1955.

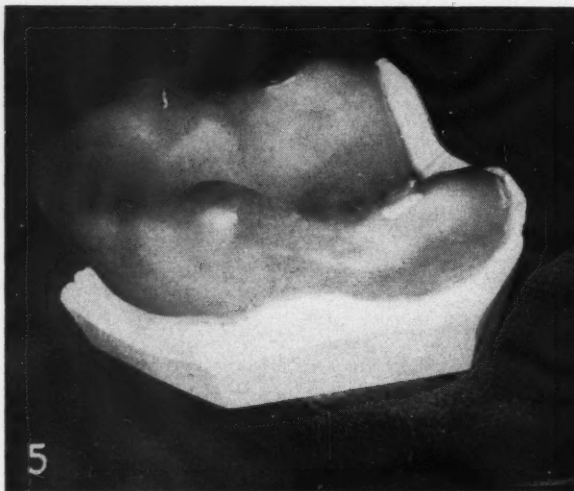
⁷Applegate, S. G.: A Fluid Wax Impression for Immediate Dentures Utilizing a Corrected Compound Technic, *J. Flor. Dent. Soc.* 10:18-20 (August) 1939.

⁸Hughes, F. C.: Transition from Natural to Prosthetic Dentures, *J. Pros. Dent.* 1:145-150 (January) 1951.



3. Preliminary cast poured and border outline scored approximately 2 to 3 millimeters short of estimated functional limits.

4. Baseplate wax adapted over remaining teeth and into undercuts.



5



6



7



8



9



10

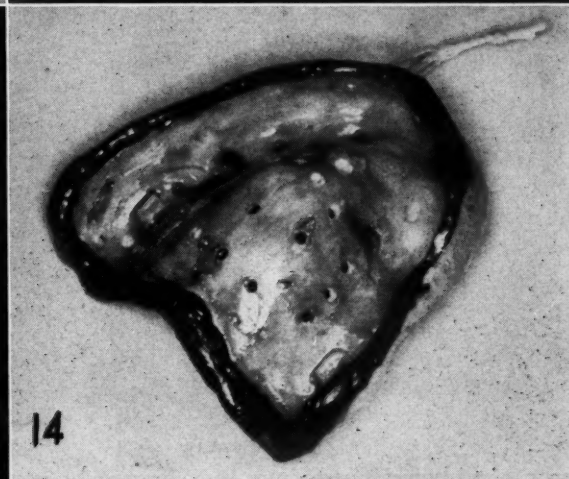
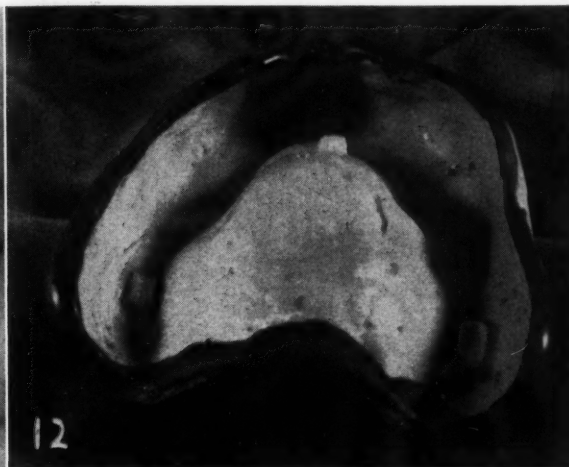
5. Baseplate wax adapted over entire cast. Stops cut into wax over nonresilient areas palatally and distally.

6. Autopolymerizing resin rolled out to thin-section and adapted over prepared cast.

7. Adaptation completed and handle placed palatally.

9. Periphery trimmed on lathe to previous score line.

10. Tray placed on cast to evaluate trimming.



11. Tray tried in mouth to ascertain freedom from functional interference.

12. Tray muscle trimmed with low fusing compound to functional limits.

13. Tray perforated and dental floss attached at distal buccal extremity to facilitate removal.

14. Completed tray painted with adhesive cement.

include the following factors:

(1) The coverage of as much denture-bearing area as possible within the normal functional movements for denture supports.

(2) The development of a border around the entire denture within the limits of tissue tolerance.

(3) The establishment of a border which provides peripheral seal, maximum lateral stability, and which harmonizes with functional movements without interference.

(4) Accurate adaptation to the underlying tissues without injurious displacement.

Impression Technique

1. A perforated stock tray is se-

lected and a preliminary impression secured (Figs. 1 and 2).

2. A preliminary cast is poured and a border outline is scribed approximately 2 to 3 millimeters short of the maximum functional limits of various freni, muscle attachments, and associated structures (Fig. 3).

3. A single thickness of baseplate wax is adapted over the remaining teeth, and all gross undercuts are blocked out with wax (Fig. 4).

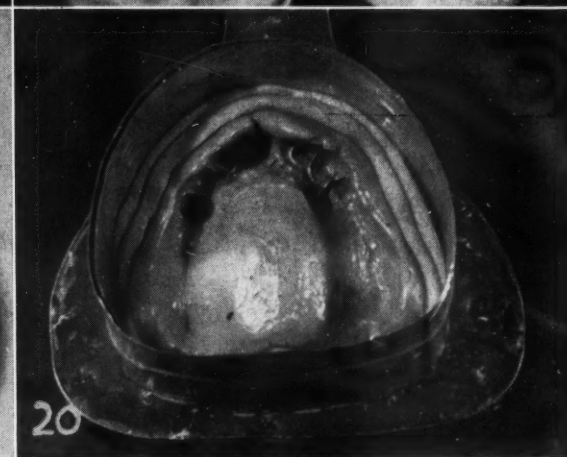
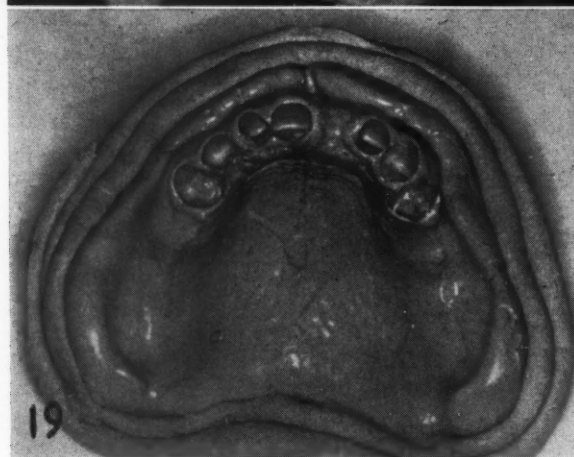
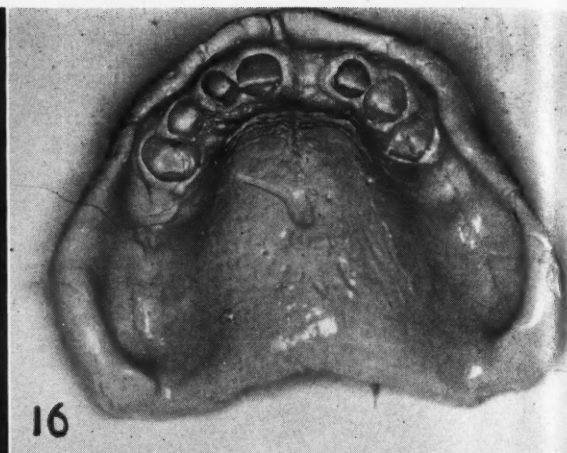
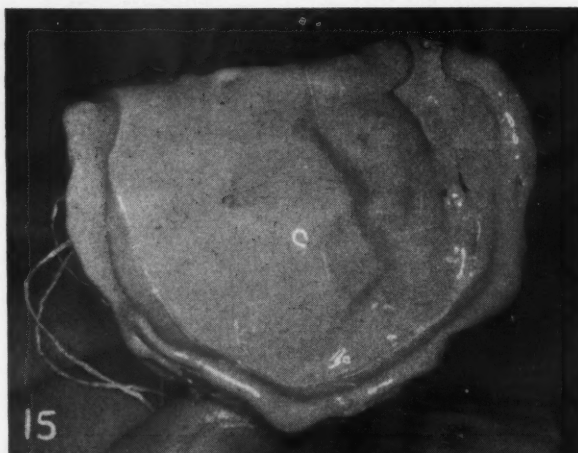
4. A second thickness of baseplate wax is adapted over the entire cast, ending at the previously estimated functional limit. Three stops are cut into the wax to serve as guides during the final impression procedure. The stops must be placed in nonresilient

tissue areas. The crest of the ridge in the molar region is usually desirable, as is the palatal or rugae portion (Fig. 5.)

5. Autopolymer resin tray material is rolled out into a thin section and adapted evenly over the entire prepared cast (Figs. 6, 7, 8, 9, and 10). A handle is placed palatally.

6. The prepared tray is brought to the mouth and trimmed 2 to 3 millimeters short of the extreme functional movements (Fig. 11).

7. The peripheral border is carefully muscle trimmed with low fusing modelling plastic to develop a peripheral roll and seal. Extreme care is taken to prevent overextension (Fig. 12).



15. Tray loaded with impression material.

16. Final impression (note development of peripheral roll and registration of anatomic landmarks).

17. Immediate denture impression showing gross undercuts in the anterior and tuberosity regions.

18. Immediate denture impression with a large number of teeth.

19. Impression boxed with weather stripping material.

20. Completed boxing of impression utilizing weather stripping material, Ash's metal, and wax paddle.

8. The excess compound is trimmed from inside the tray, and the resin tray is then perforated with a Number 8 round bur. The perforations should

be placed in areas of undercuts to prevent separation of the impression material from the tray. It may also be advisable to perforate the tray in

areas where the underlying tissues show any degree of flabbiness to preclude the possibility of tissue displacement. Four thicknesses of dental

floss are secured in the distal buccal extremity to aid in removal of the final impression (Fig. 13).

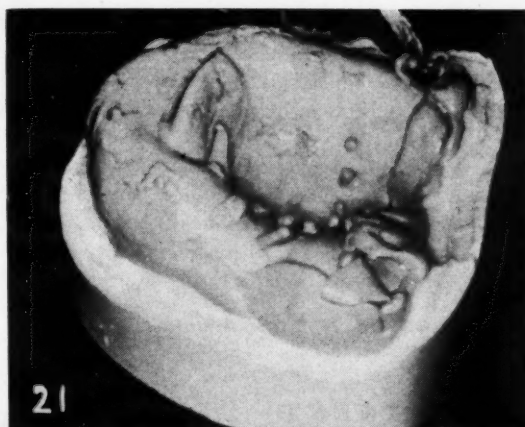
9. The entire tray and periphery is painted with adhesive rubber cement and allowed to dry (Fig. 14).

10. The rubber base material is mixed according to manufacturer's instructions and loaded evenly into the tray. Impression material must be placed along the entire periphery and in every area where an impression is desired (Fig. 15).

11. The loaded tray is brought to

21. Boxing material removed.

22 and 23. Completed final master cast.



21



22



23

the patient's mouth, seated with as little pressure as possible, and the patient is asked to execute movements such as smiling, pursing the lips, and drawing the upper lip down. The mandible may also be moved from side to side to develop the buccal pouch area. The muscle trimming should be accomplished as the material is beginning to set.

12. The final impression is dislodged, utilizing the dental floss tied together with the handle. It is removed *without touching the peripheral border*.

13. The final impression is beaded with a plastic weather stripping material approximately $\frac{1}{8}$ of an inch below the peripheral borders (Figs. 16, 17 and 18).

14. A piece of Ash's metal is wrapped around the beaded impression, secured with an elastic band, and luted to a vibrating paddle. The final cast is poured in stone (Figs. 19 and 20).

15. The boxing material is then removed, and the cast trimmed, care being taken to preserve the peripheral roll (Figs. 21, 22, and 23).

Summary

An immediate denture impression technique using rubber base impression material has been presented. This technique, when carefully executed, is a simple accurate method of obtaining immediate denture impressions that conform to the functional limitations of the patient and produce an impression of the teeth and adjacent structures taken under minimum pressure.

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Managing the FRACTURED TOOTH

with Jacket Crown

IRVING H. GOLDSTEIN, D.D.S., Atlanta

DIGEST

It is not uncommon for anterior teeth with jacket crowns to fracture at the gingiva with a clean break leaving the complete crown of the tooth in the jacket crown. This frequently happens on a recently placed jacket crown and creates a problem tooth for the operator and the patient. The technique described in this article simplifies the replacement and salvages the jacket crown. The same technique can be used for the posterior teeth.

Preliminary Steps

(1) If the tooth fractured was a vital tooth, remove the pulp and treat and fill the root.

(2) Place the jacket crown in acid to dissolve the tooth substance in the crown. It may be cleaned by mechanical means being careful not to chip the margin or fracture the jacket crown itself.

Procedure

1. Prepare or smooth the root surface of the fractured tooth. Since the tooth had previously been prepared for a jacket crown it requires little if any preparation other than smoothing (Fig. 1).

2. Fit a 14 to 18-gauge precious metal pin approximately up to $\frac{2}{3}$ the length of the root with about 1 to 2 millimeters extending. X-ray frequently to determine the exact position of the pin in relation to the root end (Fig. 2).

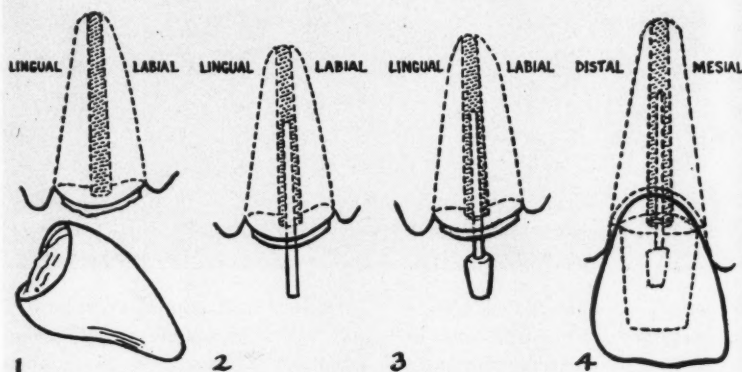
3. On the extended end solder a slight pin wire extension for thickness

in order to engage the wax for a good casting joint (Fig. 3).

4. Fit the jacket crown on the root with the pin in place to be sure the pin is free to permit proper seating (Fig. 4).

5. Lubricate the inside of the jacket crown and fill with melted inlay wax. While soft place in proper position and alignment on the root. (Fig. 5).

6. Smooth off surplus wax at the gingiva, chill, and carefully remove

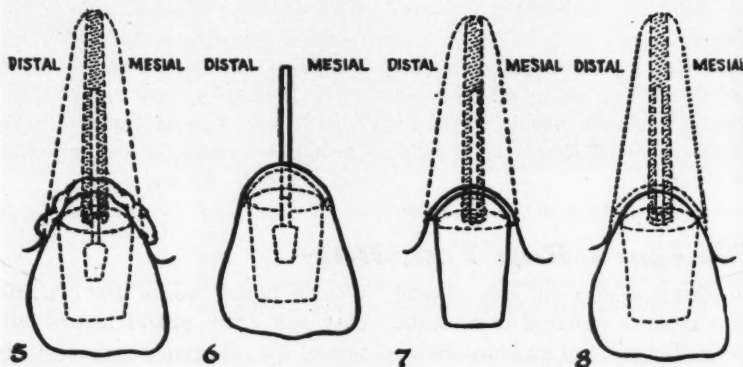


1. In the previously prepared tooth the margins are under the free margin of the gingiva.

2. Pin fitted with end extending.

3. Pin in place with thickened or prepared end.

4. Jacket crown in place over pin to test for proper seating.



5. Lubricated crown fitted with wax and placed on the pin in position for pattern impression.

6. Wax pattern is removed with jacket crown.

7. Casting cemented on root.

8. Jacket in place with exact appearance as previously and jacket crown salvaged.

the crown. The engaged pin will come with it. Remove the pattern and cast (Fig. 6).

7. The casting is cemented on the root. In cementing special care must be taken to line up the casting perfectly in the canal so that the crown will be in perfect alinement and position (Fig. 7).

8. The jacket is cemented in place with exactly the appearance as before the tooth was fractured (Fig. 8).

Alternative Technique

The following technique is applicable where there is no previous jacket replacement on the fractured tooth:

1. After the root canal has been properly treated, the same procedure for building the stump is used beginning with Steps and Figures 1, 2, and 3.

2. Build the stump direct to the pin and root surface giving it the desired preparation form leaving sufficient

clearance on all sides for proper bulk and retention (Fig. 7).

The result should resemble an ideally prepared tooth for a jacket crown.

3. After the model is cast and fitted and properly trimmed it is cemented on the root as described in Step 7. A band impression is then taken and the case is treated in the same manner as for making a jacket crown.

826 Peachtree Street

Vitamins and Dentistry for Handicapped Children

Summary

Children with cerebral palsy and mental retardation present dental problems that at times become of serious consequence to the parent, the dentist, and the child. One of the most difficult dental disturbances is the gingival condition of these patients. It was felt that, through the use of vitamin B and C therapy, patients with gingivitis would be greatly improved. Some 119 children were examined and treated from the aspects of observation, blood evaluation, and histologic interpretation.

Results Determined by Clinical Observation—In determining whether

there has been a turn for the better in the gingival tissues after vitamin B and C therapy, it would be more accurate to rely on clinical observation and histologic sections than upon vitamin determinations from blood specimens. This is because many variables arise from the time the blood is drawn to the final evaluation of the specimen. Traumatic occlusion, bruxism, and poor oral hygiene influence the gingival tissues. Clinically, after vitamin therapy the tissues appear firmer, more pinkish in color, and healthier. The tendency to spontaneous bleeding and sponginess is absent.

Tone and Structural Appearance Improved—The general feeling is that vitamins of the B group, combined with vitamin C, do build up the tone and structural appearance of the gingival tissues. It would certainly be worth while for the dentist to maintain these handicapped patients on a diet high in vitamins B and C. Treatment such as this will definitely be an asset to the dentist in his treatment of the child with cerebral palsy who is mentally retarded.

Adapted from *Oral Surgery, Oral Medicine, and Oral Pathology* 10:157 (Feb.) 1957.

Fluorine in Pregnancy

Query

Which foodstuffs are richer in fluorine? In an area where the fluoride content of the water is low, would an extra supply of such foods protect the teeth of an expectant mother against decay? Would such a diet have any effect (beneficial or otherwise) on her milk, and hence on her child?

Discussion

Most foods contain less than one part per million of fluorine, and this is true even of plants which are grown on soils which are rich in fluorine. This is thought to be because the

fluoride in the soil is present as insoluble calcium fluoride, which is not taken up by plants.

Fluorine in Tea—Tea, which grows in an acid soil, seems to be an exception, and in some countries tea is the "food" of greatest significance in determining the fluorine intake. One cup of tea may provide 0.2 milligram of fluorine, so that many people must obtain at least 1 milligram a day from this source alone.

Fluorine in Other Foods—The only other foods which contain significant amounts of fluorine are sea fish, and products such as fishpaste. Tea and

fish would certainly help to protect the teeth of any person against decay, but a high fluorine intake has no effect on the amount of fluorine secreted in the milk. Proprietary baby foods containing powdered bone may contain quite large amounts of fluorine, so much so that infants fed on them may ingest more fluorine than adults eating a considerably greater quantity of food.

Adapted from *Any Questions?* *British Medical Journal* No. 4993 (Sept. 15) 1956.

Clinical Problems

Related to the TONGUE*

E. CHERASKIN, M.D., D.M.D., and ROBERT T. BINFORD, Jr., D.M.D.,
Birmingham, Alabama

DIGEST

In the physical examination of the head and neck the oral cavity too frequently receives cursory consideration. This article presents an outline of the many local and systemic diseases which may affect one region: the tongue. The fact that numerous generalized diseases are mirrored in various lingual changes is generally appreciated. Few of the lingual signs are pathognomonic. In the constellation with other historic and physical findings, however, the tongue changes will often decide the diagnosis.

Anatomy and Physiology of the Tongue

Anatomy—The tongue is a highly vascular and muscular organ occupying most of the floor of the mouth and forming the anterior wall of the oropharynx. The dorsum is divided into an anterior two thirds and a posterior third by a V-shaped groove, the *sulcus terminalis*. The dorsum in the relaxed tongue lies just below the occlusal level of the lower teeth. The position of the tongue can be variable and is of importance in tongue habits. Embryologically, the tongue is formed from the fusion of the first, second, and third branchial arches. Persistence of the tuberculum impar, which should normally recede as the two halves of the tongue fuse, results in a congenital lesion

called *median rhomboid glossitis*.

Three Types of Papillae: The squamous epithelium covering the dorsum is specialized and unlike the surface epithelium of other mucosal tissues. On the anterior two thirds three types of papillae are recognized: (1) *filiform*, (2) *fungiform*, and (3) *circumvallate*.

The Filiform Papillae: These contribute to the velvet-like quality of the tongue. They are thin, jagged, epithelial projections, between 1 and 3 millimeters in length, and are generally arranged in rows. These papillae undergo continual desquamation and regeneration. Their presence or absence contributes greatly to lingual coating and smooth tongue. In children the filiform papillae are not as pronounced as in the adult.

The Fungiform Papillae: These are interspersed among the filiform papillae but are more numerous along the side and tip of the tongue. They are mushroom-shaped, larger, and are readily distinguished by their redness. They are not as sensitively attuned to metabolic changes as the filiform type.

The Circumvallate Papillae: Numbering eight to ten, these are arranged in a V-shaped line just anterior to the *sulcus terminalis*. They are large and flat and are surrounded by a groove containing serous glands and taste buds. The foramen cecum is located at the apex of the V. This represents the embryologic vestige of the thyroglossal duct, a remnant of the early development of the thyroid gland.

The Posterior Third: The surface of this part of the tongue contains lymphoid follicles, collectively referred to as the *lingual tonsil*.

Sensory Innervation: The general sensory innervation to the anterior two-thirds of the tongue is mediated by the lingual nerve and the gustatory sense by the chorda tympani branch of the facial nerve. Both general and taste sensation of the posterior third is served principally by the glossopharyngeal nerve and to a minor degree by the vagus. Motor innervation to the entire organ is made possible largely by the hypoglossal nerve.

Physiology—The tongue subserves four functions: (1) *taste*, (2) *speech*, (3) *mastication*, and (4) *deglutition*.

Taste: The taste buds are to be found in the circumvallate papillae and to some extent in the fungiform papillae. There are taste receptors, however, in other parts of the oral cavity. Though no anatomic support can be found, it is probable that there are four types of taste receptors for sweet, sour, bitter, and salt.

Speech: The phonatory importance of the tongue is readily evident from the observation that the production of many consonants depends upon the proper positioning of the tongue with respect to the teeth and palate.

Mastication: In order for food to be divided and macerated, it must be tossed upon the broad grinding surfaces of the posterior teeth. This is made possible by the extraordinary mobility of the tongue.

Deglutition: The first, and the only voluntary phase of deglutition is made possible when the posterior portion of the tongue containing the bolus of food is depressed while the apex is elevated. This movement hurls the

*Adapted from *The Pediatric Clinics of North America*, November, 1956, pp. 919-33, published by W. B. Saunders Company, Philadelphia.

TABLE 1.

Diseases Which Produce Macroglossia

Infectious Diseases

Actinomycosis
Histoplasmosis
Ludwig's angina
Smallpox
Thrush
Tuberculosis
Nonspecific glossitis

Physical Disorders

Foreign bodies
Jaw fractures
Mechanical edema

Chemical Disorders

Plumbism
Wasp and bee stings

Neoplasms

Fibroma
Hemangioma
Lymphangioma
Lymphosarcoma
Lipoma
Neurofibroma
Multiple myeloma
Papilloma
Rhabdomyoma

Cysts

Mucocele
Thyroglossal duct cyst

Hormonal Disturbances

Cretinism
Juvenile myxedema
Diabetes mellitus
Hypophysial gigantism

Developmental Disturbances

Congenital muscular macroglossia
Mongolism
Gargoylism

Nutritional Disorders

Ariboflavinosis
Beriberi
Pellagra
Vitamin C deficiency

Stress Reactions

Angioneurotic edema
Erythema multiforme
Serum sickness
Stomatitis venenata
Urticaria

Miscellaneous Disorders

Cardiac decompensation
Cardiac glycogen disease
Progressive muscular dystrophy

TABLE 2.

Diseases Which Produce Hypomobility of the Tongue

Infectious Diseases

Bulbar poliomyelitis
Infective glossitis
Sublingual infections

Physical Disorders

Ankyloglossia
Traumatic glossitis

Neoplastic Diseases

Teratoma
Sublingual neoplasms

Cysts

Thyroglossal duct cyst
Sublingual cysts

Stress Reactions

Scleroderma

Miscellaneous Disorders

Myasthenia gravis
Amyotrophic lateral sclerosis
Myotonia congenita
Cerebrovascular accident
Bulbar paralysis
Severed hypoglossal nerve
Syringomyelia
Cardiac glycogen disease

bolus into the pharynx, and the second stage of deglutition begins.

Clinical Examination of the Tongue

Methods of Investigation — The tongue can be examined by (1) *inspection*, (2) *palpation*, (3) *with the aid of a pharyngeal mirror*, and (4) *Wood's light*.

Inspection: The protruded anterior portion of the tongue is easily visualized. To observe the lateral borders, the tip of the tongue is held with gauze and gently retracted to the right and left.

Pharyngeal Mirror: A tongue blade and a pharyngeal mirror are useful for visualizing the posterior aspect.

Palpation: Bimanual palpation is desirable for examining the corpus of the tongue and the sublingual space. This is best accomplished with the tongue in a relaxed position.

Wood's Light: When the mouth is flooded with filtered ultraviolet light, excluding the visible rays, the dorsum of the tongue often displays a red-orange fluorescence believed to be due to the presence of porphyrins. In the

majority of healthy, well-nourished people the fluorescent area extends either over the entire dorsum or at least its anterior half. It has been observed that with papillary atrophy, as is seen in the so-called smooth tongue, there is an absence of this fluorescence. That the various vitamin B fractions seem to influence the restoration of fluorescence is doubtless due to their action in regenerating the papillae. There is, however, no absolute proof at present that reduced or absent fluorescence is always due to a vitamin deficiency. Fluorescence seems to decrease with age even though there is no obvious disease or malnutrition.

Symptoms

By definition, a symptom is *subjective*, and pain is the most common complaint.

Pain—The most important cause for pain is mechanical trauma to the tongue which may develop with accidental biting or other traumatic conditions. Next in frequency are probably systemic and local infective states leading to vesicle and ulcer

TABLE 3.

Diseases Which Produce Color Changes in the Tongue*

Infectious Diseases	Chemical Disorders
Early scarlet fever (W)	Aplastic anemia (R because of purpura)
Late scarlet fever (R)	Sodium perborate (R)
Thrush (R with W curds)	Candies (variable)
Measles (R)	Black hairy tongue (B, Br, Y, G)
Smallpox (R)	
Fusospirochetosis (R)	Neoplastic Diseases
Gonococcal stomatitis (Y)	Fibroma (R)
Nonspecific glossitis (R)	Hemangioma (R)
Secondary syphilis (W)	Papilloma (W)
Histoplasmosis (W)	Lipoma (Y)
Physical Disorders	Rhabdomyoma (P)
Galvanism (R)	Myoblastoma (P)
Traumatic glossitis (R)	
Traumatic hyperkeratosis (W)	Cysts
	Mucocoele (Bl)
	Hormonal Disturbances
	Diabetes mellitus (W)

*The characteristic color change is indicated in code: R, red; W, white; Y, yellow; B, black; G, green; Bl, blue; Br, brown; and P, pale.

formation. In some cases lingual pain is described as soreness or burning.

Deficiency Glossitis: When this symptom accompanies papillary atrophy, erythema and enlargement, a deficiency glossitis should be sus-

pected. Such a clinical picture may result singly or in combination with microcytic hypochromic anemia, macrocytic hyperchromic anemia, and vitamin B deficiency states which may in turn be related to gastrointestinal

TABLE 4.

Diseases Associated With Lingual Coating

Infectious Diseases	Chemical Disorders
Scarlet fever	Agranulocytosis
Diphtheria	Black hairy tongue
Fusospirochetosis	
Measles	Neoplastic Diseases
Typhoid fever	Leukemia
Typhus fever	
Yellow fever	Hormonal Disturbances
Pneumonia	Diabetes mellitus
Tonsillitis	
Pharyngitis	Reactions to Stress
Laryngitis	Rheumatic fever
Acute febrile diseases	Anxiety
Psittacosis	
Physical Disorders	Miscellaneous Disorders
Traumatic glossitis	Gastritis
Mouth breathing	Cardiospasm
Insufficient mastication of food	Intestinal and pyloric obstruction
Decreased tongue mobility	Renal failure
High intake of soft and liquid foods	

disturbances. A protein deficiency, particularly of tryptophane, may induce such a glossitis.

Diagnostic Measures: Since the atrophic changes are not pathognomonic, blood studies, gastric analysis, and an adequate dietary history are necessary to make a diagnosis. In addition, a thorough physical examination should be directed toward finding other confirmatory evidence, such as angular cheilosis, dermatitis, and lassitude.

Diagnosis: The presence of pain becomes important in differentiating deficiency glossitis from (1) geographic tongue, (2) median rhomboid glossitis, (3) black hairy tongue.

Other Symptoms — Fusospirochetosis frequently produces a metallic taste. True abnormalities, however, in the gustatory sense are exceedingly rare. Difficulty with speech and faulty articulation may be associated with macroglossia, hysteria, and various neurologic disorders.

Signs

By definition, a sign is an *objective* finding. The examination of the tongue should include an appraisal of the following conditions: (1) *tongue size*, (2) *position and mobility*, (3) *color*, (4) *coatings*, (5) *primary and secondary dermatologic lesions*, (6) *papillary status*, (7) *grooves*, (8) *scars*, and (9) *malformations*.

Tongue Size—In the final analysis there are only three possibilities: (1) *enlarged tongue*, (2) *normal tongue*, (3) *small or absent tongue*. Tongue enlargement is by far the most common pathologic condition.

Macroglossia: This condition, also known as enlarged tongue, may be (1) generalized, or (2) localized in its distribution. Thus the entire tongue may be involved, or only one portion. For example, congenital muscular macroglossia is of the generalized type, whereas infection, simple mechanical trauma, or a neoplasm produces enlargement of only a segment of the tongue.

Transient or Permanent Macroglossia: Infectious glossitis, for example, produces swelling for a limited time.

In contrast, developmental or untreated hormonal disturbances yield a more or less permanent macroglossia.

Congenital or Acquired Macroglossia: The infant may be born with a large tongue or this condition may arise postnatally. Hemangiomas and lymphangiomas are relatively common examples of congenital neoplasms which lead to localized enlargement.

Absolute or Relative Macroglossia: There may be a true enlargement which can be traced to an increase in cellular (for example, rhabdomyoma), or extracellular (for example, edema) factors. Or, the tongue may only appear large because the neighboring structures are small: the tongue may seem large with respect to a small mouth. A relative macroglossia is observed in the young, healthy infant. It is also encountered in mongolism. The diseases of pediatric interest which produce macroglossia are classified in Table 1.

Microglossia and Aglossia: A small tongue (microglossia) and its total absence (aglossia) are exceptionally rare. Usually, in children, a reduced or absent lingual organ is of congenital origin.

Tongue Position and Mobility — The tongue can assume only a limited number of positions: (1) *elevation*, (2) *glossoptosis*, or (3) *forward thrusting*. As already stated, the tongue is capable of a great range of motion. Any consideration of tongue pathology must necessarily include a discussion of (1) *tongue elevation*, (2) *glossoptosis*, (3) *hypermobility*, and (4) *hypomobility*.

Elevation of the Tongue: This common condition is generally associated with infections and particularly those which develop in the sublingual space. Similarly, any neoplasm or cyst in this region can cause such displacement.

Glossoptosis: In this condition the tongue is displaced in a posterior direction possibly to the point of respiratory obstruction. It may be seen in congenital mandibular hypoplasia.

Forward Thrusting: This habit often follows efforts at breaking a previous thumb-sucking habit, particularly when an open bite has been pro-

TABLE 5.

Diseases Producing Lingual Ulcerations

Infectious Diseases

Fusospirochetosis
Diphtheria
Syphilis
Tularemia
Actinomycosis
Blastomycosis
Histoplasmosis
Thrush
Herpes simplex
Herpes zoster
Pertussis

Physical Disorders

Galvanism
Mechanical and thermal trauma

Chemical Disorders

Aplastic anemia
Agranulocytosis
Simple chemical burn (aspirin)

Reactions to Stress

Urticaria
Erythema multiforme
Lupus erythematosus
Scleroderma

TABLE 6.

Diseases Producing Papillary Atrophy

Infectious Diseases

Syphilis
Thrush

Physical Disorders

Traumatic glossitis

Hormonal Disturbances

Hyperthyroidism
Cretinism
Juvenile myxedema

Nutritional Disturbances

Ariboflavinosis
Pellagra
Celiac disease

Developmental Disturbances

Geographic tongue

Miscellaneous Disorders

Hypochromic anemia
Congestive heart failure

duced. The patient will thrust the tongue into the open space each time he swallows. This action obviously perpetuates the dental deformity. Psychotherapy may be required to correct this habit.

Hypermobility: This fairly common neuromuscular sign is usually related to anxiety. Marked tremors on protrusion, however, frequently suggest Sydenham's chorea. This sign may also be present in chemical intoxications (for example, plumbism) and also in hyperthyroidism and rheumatic fever.

Hypomobility: This is invariably significant since, under normal conditions, the tongue is extremely mobile. A painful glossitis, neurologic disorders which involve the muscles of the tongue, and ankyloglossia (tonguetie) all restrict the range of tongue action. The incidence of lingual hypomobility in cardiac glycogen disease is great and should be born in mind. Table 2 presents an outline of conditions producing this sign.

Color Changes in The Tongue — Seldom are color changes the only sign of a disease. Alterations in size, papillary status, and subjective complaints usually add to the picture. With the exception of the white coated tongue, the redness of inflammatory erythema is the most frequent color alteration. Such erythema is either localized or generalized and may or may not be painful. Usually, papillary atrophy accompanies it.

Localized Erythema: Generally the result of physical trauma, a badly broken down tooth, an irritating restoration, or an ill-fitting appliance. Occasionally this erythema is accompanied by a nonspecific glossitis, or, rarely, a lingual abscess. Median rhomboid glossitis is characterized by a smooth, shiny, red, oval plaque located in the midline just anterior to the circumvallate papillae. It is a congenital, benign, asymptomatic lesion. Lingual hemangiomas are characteristically dark blue-red and are of particular interest in pediatrics because they are congenital and are usually recognized in infancy.

Generalized Erythema: This has long been recognized in the various

vitamin B complex deficiency diseases. Pellagra, sprue, ariboflavinosis, and juvenile pernicious anemia are accompanied by a red and painful glossitis. The pellagrous glossitis is described as beefy red, whereas the tongue of ariboflavinosis is magenta. Considerable supportive evidence is required in addition to the tongue findings for diagnosis. The nutritional deficiencies are so frequently multiple that it is seldom that a pure syndrome is recognized.

Other Examples: The pallor of the mucous membranes in anemia, the increased redness in polycythemia and hypertension, and the yellow cast seen in jaundice are examples of the potential importance of this clinical sign. Diseases which present color changes in the tongue are outlined in Table 3.

Tongue Coatings—It should be remembered that the tongue is frequently coated under physiologic conditions, particularly upon arising in the morning. Such coating results from the passive accumulation of bacteria, mucin, food debris, and desquamated epithelium from the filiform papillae. An actual increase in thickness of the papillary epithelium plays a more important role in coat formation than was frequently thought. In support of this is the fact that various dyes painted on the dorsum may require several days before they are removed by the process of desquamation. In healthy persons, chewing, talking, and salivation mechanically cleanse the tongue.

Other Causes of Coating of Tongue: Heavy lingual coatings are observed in children who are habitual mouth breathers or suffer with febrile and other dehydration states. The cause of such lingual coatings is not entirely clear. Drying of the oral mucosa, however, lack of mechanical cleansing of the tissues due to nondetergent diets, local hypoxia, and regional vasomotor changes all probably serve etiologic roles. A theory of retrograde intestinal flow has been advanced to explain the frequency with which tongue coating and alimentary problems are associated but attempts to prove this theory have not been successful.

Intestinal Disorders: Contrary to

popular belief, constipation is not associated with tongue coating, although the vomiting of intestinal and pyloric obstructions invariably produces a thick lingual coat. This is found also in severe cardiospasm with esophageal retention. The underlying mechanism is obscure.

Other Disorders: Coating may be produced on the paralyzed side in various neurologic disorders affecting the hypoglossal nerve. Kidney disease does not generally affect the tongue with the exception of renal failure. In this condition the coating is brown and is believed to be due to the excretion of nitrogenous products in the saliva. Most generally, the color of

TABLE 7.
Diseases Producing
Fungiform Hypertrophy

Infectious Diseases

Scarlet fever
Measles

Chemical Disorders

Black hairy tongue (filiform hypertrophy)

Hormonal Disturbances

Diabetes mellitus

Nutritional Diseases

Ariboflavinosis
Pellagra

Developmental Disturbances

Fissured tongue

the coated tongue is white, but may be changed by foods, tobacco, and medicaments. A summary of the diseases associated with lingual coating is presented in Table 4.

Vesicles—There are four primary epithelial lesions: (1) *macules*, (2) *papules*, (3) *vesicles*, and (4) *pustules*. Of this group, the vesicle is the most common lesion observed on the tongue. Broadly speaking, vesicles may occur in connection with viral diseases (for example, herpes simplex and chickenpox) and thermal trauma, and as a reaction to stress and to an-

tigenic substances (for example, erythema multiforme). It should be recalled that a vesicle or bulla is thin-walled and that in the presence of the usual intraoral trauma, the vesicle is short-lived. The end result is an ulcer. Thus it is indeed rare to observe vesicle formation anywhere in the oral cavity and especially in a hypermobile and constantly traumatized organ like the tongue.

Ulcerations—There are more than a score of secondary dermatologic lesions (1) nodules, (2) crusts, (3) scabs, (4) excoriations, (5) wheals, (6) fissures, and, most important to this discussion, (7) ulcers. The most frequent cause of lingual ulcerations in children is mechanical trauma. This may occur from tongue biting or irritation from a sharp edge on a tooth. Ulcerations often occur after the ingestion of a hot liquid. It can be observed from Table 5 that there are many disorders accompanied by ulcers on the tongue.

Papillary States—The lingual papillae are highly sensitive structures which change in size under a variety of conditions and can actually grow in a matter of days. Basically, there are two pathologic possibilities: (1) *atrophy* of the papillae, and (2) *papillary hypertrophy*.

Atrophy: The smooth or atrophic tongue is always the result of the combined effect of normal or accelerated degeneration and deficient regeneration of the filiform papillae. Although the exact mechanism is not known, tissue respiration appears to be a cardinal factor. A disturbance in the intracellular respiratory enzyme systems is likely at fault in the riboflavin and niacin deficiency states. The pellagrous tongue is fiery red, edematous, and tender. As the condition advances, the filiform papillae atrophy. Tissue hypoxia may also explain the atrophy which occurs in severe cardiac decompensation, and perhaps iron deficiency anemias. It is interesting that both hyperthyroidism and hypothyroidism have been associated with smooth tongues.

Geographic Tongue: This occurs in children, notably in those suffering with mild febrile diseases. It is a benign, usually asymptomatic lesion

characterized by irregular patches of filiform papillary atrophy surrounded by a gray-yellow border. The atrophic areas migrate continually and therefore produce a "geographic" appearance. It is not related to any deficiency disease and no therapy is required. Table 6 schematizes conditions associated with papillary atrophy.

Hypertrophy: Black hairy tongue (lingua nigra) is the only condition which produces enlargement of the filiform papillae. It is a rare asymptomatic disorder affecting most frequently young adult males. The papillae may overgrow to the extent that they actually tickle the palate. The pigment depends upon the types of chromogenic organisms trapped between the papillae and is usually black, brown, yellow, or green.

Incidence: The incidence of hypertrophy has greatly increased since the advent of antibiotic lozenges. This would suggest an alteration in the balance of normal flora permitting various fungi to flourish.

Treatment: Good oral hygiene should be established and any topical antibiotic agent should be discontinued. In persistent cases the topical application of 10 to 15 per cent salicylic acid may be helpful. A 3 per cent hydrogen peroxide mouthwash will remove discoloration, and the application of a 20 per cent aqueous solution of sodium caprylate may be used as a fungicide.

Other Conditions: The fungiform

papillae are sometimes truly enlarged in ariboflavinosis. The tongue may be slightly edematous and also show prominent fungiform papillae in thiamine deficiency, although this is not a constant or significant finding. The so-called strawberry tongue of scarlet fever is seen in only slightly more than half the cases. An early white tongue coat is noted with prominent fungiform papillae (white strawberry tongue). Three or four days later the coating disappears and a red beefy swollen tongue results (red strawberry tongue). Table 7 summarizes these papillary changes.

Grooves — The median raphe is normally prominent. Usually there are also parallel furrows on both sides of the raphe. When the fissures are irregularly arranged, the term *scrotal tongue* is applied. Fissuring is generally held to be congenital and may be inherited as an irregular dominant characteristic. Sometimes congenital fissuring is associated with slight macroglossia, prominent fungiform papillae, and geographic tongue. It is of interest that there is a characteristic fissuring of the tongue in *mongolism*.

Scars—Tongue biting in grand mal epileptic seizures and in nonepileptic infantile convulsions is the most frequent cause of scarring, and preventive measures to guard against this accident should always be taken.

Malformations—Ankyloglossia, fissuring, and median rhomboid glossi-

tis constitute the most common malformations. Median rhomboid glossitis is relatively rare, the characteristics are specific, and its recognition is simple. Nevertheless, many of these cases have been erroneously diagnosed as a lingual neoplasm. It occurs as a slightly elevated red oval patch in the midline of the dorsum of the tongue and just anterior to the circumvallate papillae. It is devoid of filiform papillae, so that its surface is usually smooth and glistening, although it may present a nodular appearance. This condition is benign, congenital, and asymptomatic.

Summary

Pathology of the tongue becomes clinically apparent by way of *symptoms* and *signs*. The most important symptom is *pain*, although there may be alterations in *taste*, *difficulty in speech or swallowing*. Signs of lingual pathology are apparent by changes in *tongue size*, *position*, *mobility*, *color*, *coatings*, *dermatologic lesions*, *papillary status*, *grooves*, *scars*, and *malformations*. Since no one symptom or sign is pathognomonic, it is necessary to fit together the positive subjective and objective findings. These, in combination with an adequate history and physical examination, provide the only means of arriving at an etiologic diagnosis of pathosis in the tongue.

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Precancerous Skin Lesions Leukoplakia and Leukokeratosis

The common site for the development of leukoplakia is in mucous membrane tissue, often on the exposed portion of the lips. Leukoplakia may also occur anywhere in the buccal cavity, and is also seen in the esophagus, trachea, and vagina.

Frequent Location— It is found most frequently on the tongue and inside the cheeks, often along the line of occlusion of the teeth. The hard palate and the gingiva, es-

pecially in edentulous areas, are also common sites. Characteristically there is a "piling up" of epithelium, with white discoloration. The consistency and color of the surface may vary from a thin, bluish white to a thick, leathery, ridged, or warty yellow-white. Histologic sections show hyperkeratosis.

Possibility of Malignant Change — Most cases of leukoplakia probably do not become cancer. Pa-

tients with leukoplakia should be warned, however, of the possibilities of malignant change and all oral irritants discontinued.

Treatment— Therapy includes elimination of discoverable etiologic factors, with subsequent cauterization or surgical excision. Careful excision of the involved area results in slight scarring or deformity, and the procedure is readily accomplished under regional block anesthesia.

From *Cancer Bulletin* 8:105 (November-December) 1956.

Successful Treatment of Infected Pulpless Teeth and Periapical Disease with TERRAMYCIN®

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DIGEST

An aqueous solution of Terramycin® having a concentration of 250 milligrams per cubic centimeter of distilled water, sterile water, or Water for Injection, U.S.P., was used in the treatment of infected pulpless chambers of teeth with and without periapical disease. A total of 50 teeth was subjected to complete root canal therapy. In each case the procedure was successful. This article describes the rapid and practical technique that was used.

Preoperative Examination

Examination of cases indicated for root canal therapy revealed the following conditions:

1. Most of the teeth were affected by severe pulpitis which were determined by histories of severe pain. Upon opening of such teeth, there was evidence of pus, a wet gangrene of the pulp associated with foul odor.

2. Some teeth were subjected to accidental blows and consequent strangulation and death of their pulps. These teeth were also associated with pain, a dry or wet gangrene of the pulp, foul odor, and mobility.

3. Some teeth had been opened previously for drainage and several teeth with histories of occasional dull

1. These are x-ray drawings made from high magnification studies. This drawing shows a lingual root of an upper right 6-year molar with a large circumscribed radiolucent area surrounded by a rather thick border.

2. Root canal filling. Series of regularly spaced breaks in the circularly described border.

3. Diffuse bony or calcific infiltration into the radiolucent area.

4. Infiltration of three waves of dome-shaped bony or calcific material with greater density. The waves have their bases on the periphery and convergence toward the centrosphere of the involved area. The dark shade represents radiopacity and the white area represents radiolucency.

pain had caries of long standing with carious exposures and dead pulps.

4. Deep-seated amalgam restorations, gold inlays, or silicates were evident. Most of the teeth with silicate restorations and chronic caries showed evidence of alveolar infection and/or periapical involvement radiographically. Most of the circumscribed radiolucent areas could have been granulomas, and in one case, a large circumscribed area with a rather thick white border was evident. This could have been a cyst.

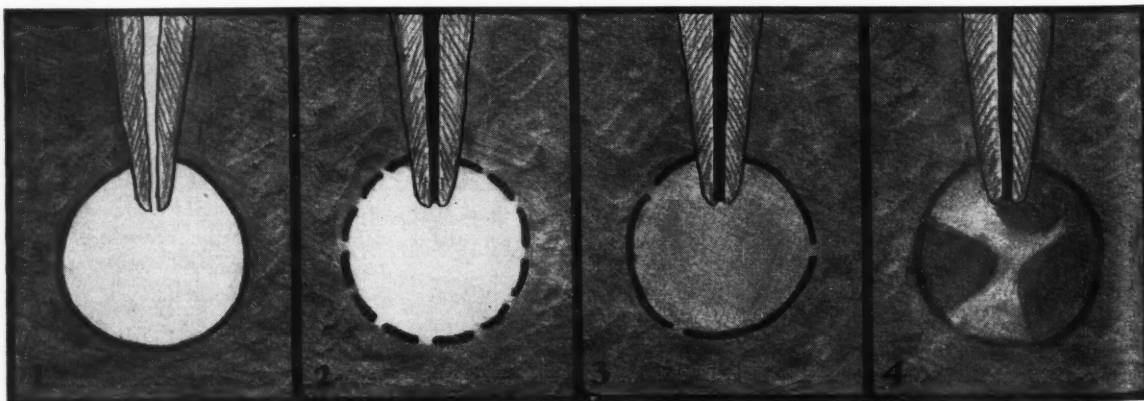
Method of Treatment

The following steps were taken:

1. In all cases a rubber dam was placed isolating the teeth to be treated. A saliva ejector was inserted in the mouth, and the operative field was painted with a tincture of iodine or methiolate.

2. The teeth were entered with burs, the coronal pulp was resected, and the radicular pulp extirpated with brooches.

3. The canals were enlarged with reamers and files and debrided with 3 per cent hydrogen peroxide fol-



lowed by sterile water. They were then dried with sterile dry paper points.

4. The Terramycin solution was injected into the canals with a hypodermic syringe, after which the drug was facilitated to penetrate into the walls of the coronal cavity, root canals, and the periapical tissues.

5. In the case of an upper right six-year molar, about $\frac{1}{2}$ cubic centimeter of the Terramycin solution was injected through the lingual root into a probable cyst. The drug remained in contact with the tooth cavities and canals for a period of 4 to 8 minutes, after which the root canals and cavities were dried and the root canals filled with gutta percha with an additional cementing medium.

6. A base of zinc oxyphosphate cement was placed in the coronal cavity and permanent restorations of silicate or amalgam were placed over this as indicated.

Postoperative Examination

All teeth so treated were subjected to clinical and radiographic observations postoperatively at various intervals up to a period of nine months and over. None of these teeth required subsequent apicoectomies or extrac-

tions; on the contrary, they all showed a progressive and favorable reaction as determined by (1) clinical examination, (2) histories from the patients, and (3) periodic radiographic readings.

Filling in of Bony Tissue—There was a progressive filling in of bony tissue in all cases where there were circumscribed or irregular radiolucent periapical areas.

Possible Presence of Cyst — The most interesting case was one in which a large circumscribed radiolucent area was surrounded with a thick white border (probably a cyst). In this case consecutive postoperative radiograms revealed (A) a series of regularly spaced breaks in the circularly described white border, (B) a diffuse bony or calcific infiltration into the radiolucent area, and (C) infiltration of three waves of dome-shaped bony or calcific material which showed greater density than the diffuse type of infiltration.

Progress of Calcific Waves — The bony or calcific waves had their bases on the white periphery, were spaced almost equidistant apart, and were progressing at almost equal rates toward the centrosphere of the involved area.

Summary and Conclusion

(1) A Terramycin solution having a concentration of 250 milligrams per cubic centimeter of sterile water was used in 50 cases of root canal therapy. (2) Many of these teeth treated possessed periapical involvement that could have been merely bone rarefaction or granulomas. (3) One root had an apical circumscribed radiolucent area surrounded by a thick white border. This was probably a cyst. (4) All teeth treated had necrotic pulps, some long-standing, and others recent deaths.

Method of Treatment—One application of the Terramycin solution for a timed period of 4 to 8 minutes completed the medication. The canals were filled and the tooth restored to function at the same sitting.

Results Successful — Postoperative clinical and radiographic examinations up to a period of ten months revealed no untoward reactions. Periapical, radiolucent, or rarefied areas showed a progressive bony infiltration or calcification. Mobile teeth tightened up shortly after the treatments were completed.

2424 Bristol Street

Development of the Study of Disease

HEALTH is no longer viewed in the negative sense as the mere absence of disease. Health connotes a harmony of mind and body with self and environment. This balance will obtain with the normal activity of every vital and supporting function. The nice adjustments of the body to its surroundings have been grouped under the term homeostasis by Cannon. Selye has extended this concept in his theory of adaptation. The internal milieu of the mammalian body is a complex,

ever-changing medium of physical, physiologic, and chemical factors so integrated in health as to maintain a sense and a presence of well-being. The present viewpoint, for example, emphasizes the continuous alterations in chemical constituents upon momentary changes in bodily or tissue requirements. Such changes may involve simple chemical reactions, or they may invoke complex physical, enzymatic, and steroid mechanisms. As long as the reserve of the involved

elements is adequate, physiologic equilibrium may be maintained. To this harmonious balance, the term eucrasia (eucrasy) has been applied. An unnatural imbalance through an exhaustion of the reserves or an inability to meet demands from normal or abnormal sources results in a disturbance of function. Such disruptions find expression in symptoms and eventually in signs arising from pathologic changes in tissues or organs.

From *Journal of the American Medical Association* 162:568 (Oct. 6) 1956.

The Effectiveness of the Steroid.

9-Alpha-fludrohydrocortisone Acetate in the Treatment of VIRAL DISEASE and Other Minor Lesions of the Oral Cavity

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DIGEST

This article discusses the results attained in the treatment of refractory diseases of the oral cavity, chiefly viral in nature, by the topical application of the halogenated analog of the hydrocortisone acetate, fludrocortisone acetate.

Developmental Factors

Since the introduction of corticotropin (ACTH) and cortisone in 1949 by Hench and his co-workers¹ in the treatment of rheumatoid arthritis and its variants, the scope of application of these agents has spread rapidly with gratifying results in most cases. It soon became apparent that in smaller dosages of the steroids, various dermatologic diseases responded favorably to this new type of hormonal therapy. Later Witten,² Sulzberger and Witten,³ Gordon,⁴ Sidi, et al.,⁵ Robinson and Robinson,⁶ utilized the derivative of the early steroid, hydro-

cortisone, in which the hydroxy group replaced a ketone group in the chemical structural formula of cortisone in the treatment of dermatologic disease of all types with rather beneficial effects (Figs. 1 and 2).

Derivatives Synthesized—Recently several derivatives of cortisone acetate and hydrocortisone acetate have been synthesized in which the 9-alpha-hydrogen atom is replaced by a halogen. According to Wright⁷ and his co-workers, 9-alpha-fludrohydrocortisone acetate possessed approximately 13 times the inflammatory activity of the hydrocortisone acetate.

Topical Effects—When used topically 9-alpha-fludrohydrocortisone (fludrocortisone) acetate is an effective antiinflammatory agent in approximately the same type of cutaneous and mucous membrane diseases as these benefitted by cortisone and hydrocortisone acetate. It is effective even in concentrations as low as 0.1 per cent.

Use in Dental Medicine Demonstrated—Because hydrocortisone could be used with safety in low dosages Strean and Horton⁸ attempted to establish the role of this hormone in dental medicine. These two investigators employed hydrocortisone acetate successfully in the treatment of temporomandibular joint disease and a variety of other oral diseases.

High Potency Displayed by Derivative—Fried and Sabo⁹ initiated the

development of several derivatives in which 9-alpha-hydrogen atom is replaced by a halogen. The high potency which this compound demonstrated in animal assays clearly indicated the desirability of a clinical evaluation of this steroid in man.¹⁰

Excellent Results in Diseases of Oral Cavity—In the treatment of refractory diseases of the oral cavity, chiefly viral in nature, excellent results have been obtained by the topical application of the halogenated analog of the hydrocortisone acetate—fludrocortisone acetate.

Treatment of Dermatoses and Mucosal Diseases—It is indicated that this halogenated steroid, fludrocortisone acetate be tried in dental practice since Witten and Sulzberger,³ Wright,⁷ and Fried¹¹ have all reported favorable experiences with fludrocortisone acetate in the treatment of dermatoses and mucosal diseases.

Documentation of Beneficial Influence

The beneficial influence of the steroids and their derivatives on allergic drug reactions of the serum sickness type have repeatedly been documented. Shulman¹² states, "These steroids represent one of the most useful clinical applications of the adrenocortical steroid therapy."

Allergic Sensitization and Systemic Damage Absent—Witten and Sulzberger³ state, "There were no instances of allergic sensitization or of

*Topical ointment "Aflorone" acetate 0.25 per cent (fludrocortisone) acetate was supplied through the courtesy of Doctor Lyon P. Strean, Merck, Sharpe & Dohme Research Laboratories, West Point, Pennsylvania.

¹Hench, P. S.; Kendall, E. C.; Slocumb, C. H.; and Polley, H. P.: The Effect of a Hormone of the Adrenal Cortex (17-hydroxy-11-Dihydrocorticosterone: Compound E) and of the Pituitary Adrenocorticotrophic Hormone on Rheumatoid Arthritis: Preliminary Report of Treatment, Proc. Staff Meet. Mayo Clin. 24:181-197 (April 13) 1949.

²Witten, V. H.: Topical Hydrocortisone in the Treatment of Skin Disease. Annals New York Academy Sc. 61:Art. 2 (May 27) 1955.

³Sulzberger, M. B., and Witten, V. H.: The Effect of Topically Applied Compound F in Selected Dermatoses, J. Invest. Dermat. 19:101 (Aug.) 1952.

⁴Gordon, D. M.: The Clinical Use of Corticotropin, Cortisone and Hydrocortisone in Eye Disease, Springfield, Ill., Charles C Thomas, 1954.

⁵Sidi, E. J., Bourgeois-Gavardin & G. Plas.: Topical Application of Hydrocortisone Acetate in Treatment of Dermatoses, Eczema and Pruritis. Presse Med. France 61:992 (July) 1953.

⁶Robinson, H. M., and Robinson, R. C.: Treatment of Dermatoses with Local Application of Hydrocortisone Acetate, JAMA 155:1213 (July) 1954.

⁷Wright, E. T.; Graham, J. H.; Newcomer, V. D.; and Sternberg, T. H.: Evaluation of 9 alpha-Fludrohydrocortisone Acetate in Treatment of Various Inflammatory Dermatoses, Arch. Dermat. 72:69 (July) 1955.

⁸Strean, L. P., and Horton, C. P.: Hydrocortisone in Dental Practice DENTAL DIGEST 59:8 (Jan.) 1953.

⁹Fried J., and Sabo, E. F.: 9 Alpha-fludrohydrocortisone Derivatives of Cortisone and Hydrocortisone J. Clin. Soc. 76:1465 (Jan.-Mar.) 1945.

¹⁰Fried, J., and Sabo, E. F.: Synthesis of 17 alpha-Hydroxycorticosterone and its 9 alpha-Halogenated Derivatives from 11-epi-17 alpha-Hydrocorticosterone, J. Am. Chem. Soc. 75:2273 (April-June) 1953.

¹¹Fried, J.: Biological Effects of 9 alpha-Fludrohydrocortisone and Related Halogenated Steroids in Animals, Ann. New York Academy Sc. 61:573 (May 27) 1955.

¹²Shulman, L. P.: Allergic Reactions to Therapeutic Agents: Treatment with Hydrocortisone, Ann. New York Academy Sc. 61:8 (May 27) 1955.

local or systemic damage resulting from fludrocortisone acetate or the hydrocortisone free alcohol preparations during their periods of observations." They conclude that fludrocortisone acetate is slightly more effective than hydrocortisone free alcohol in the topical therapy of the selected dermatoses they treated.

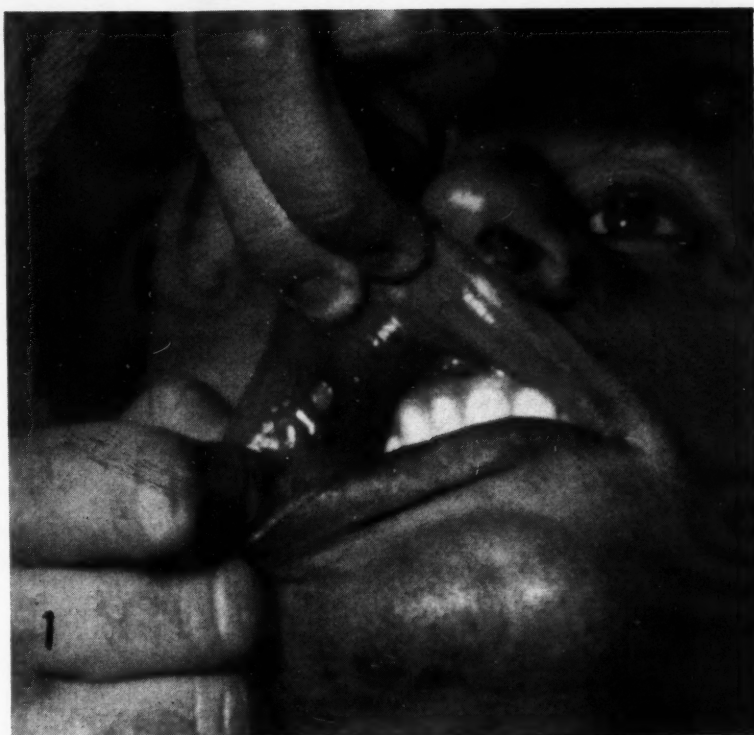
No Side Effects from Topical Application — Similar findings are reported in 64 cases of mucous membrane lesions of various types, viral disorders predominating. Because of the low dosage used, no side effects were observed after topical applications of fludrocortisone acetate.

Caution Suggested in Specific Cases —Livingood, cited by Sulzberger,³ has demonstrated salt and water retention following topical use of fludrocortisone acetate, especially the lotion form. This suggested the need for caution in its application, notably for extensive dermatoses in patients with possible renal, cardiovascular, or pulmonary weaknesses. See Figures 3 and 4 demonstrating the effectiveness of fludrocortisone acetate 0.25 per cent in the treatment of lesions of the buccal mucosa.

Topical Application Effects Improvement — Cortisone or its analogues does not possess antibacterial or antiviral properties. It merely suppresses the inflammatory processes associated with viral and bacterial disease. Topical application of the ointment, three times a day, utilizing an applicator or the tip of a clean finger on a dry surface will suffice to effect improvement or cure.

Encouraging Results from Fludrocortisone Acetate Ointment Reported —Many other oral diseases such as lichen planus and leukoplakia which have heretofore proved refractory to conservative treatment are now benefited by the topical application of fludrocortisone acetate ointment in low dosages of 0.25 per cent. Streat¹³ reports encouraging results for this product which is one of the most potent of the cortical hormonal agents and their derivatives. It is absorbed readily by the mucous membrane in the treatment of many other recalcitrant

¹³Streat, L. P.: The Possible Role of Cortisone in Dental Medicine, New York J. D. 22: (Mar.) 1952.



1. Solitary herpetic ulcer of the buccal mucosa before treatment with fludrocortisone acetate.



2. The disappearance of the herpetic lesion four days after treatment with fludrocortisone acetate 0.25 per cent in the buccal mucosa of a young male.



3. Aphthous ulcer prior to treatment with Aflorone in the labial mucosa of a young man.

trant diseases of the oral cavity as well as allergic reactions to drug therapy.

Treatment

Several forms of treatment are described by Kylo¹⁴ who used a 2 per cent aqueous solution of asterol citrate, 1 ounce to a glass of water as a collutorium. He also recommended swabbing the ulceration of the mucous membrane of the oral cavity with a full-strength solution.

Viral Diseases — Schwartz¹⁵ employed sodium caprylate, propionic acid, sodium propionate and quarternary ammonium compounds for effective treatment of viral diseases.

Virus Diseases — Simpson¹⁶ recommends gentian violet, alkaline mouthwashes, ultraviolet rays, vitamin B complex, and even diathermy in the treatment of virus diseases. Phenol should not be used for cauterization in the oral cavity, as it is extremely destructive and not self-limiting.

Aphthous Ulcers — Bergman¹⁷ reported on the successful topical appli-

cation of hydrocortisone acetate ointment for aphthous ulcers.

Dermatoses and Mucosal Diseases — Witten,² Sulzberger,¹⁸ Wright,⁷ Goldfein,¹⁹ and Weisstein²⁰ all experienced similar success when they applied fludrocortisone acetate in the treatment of dermatoses and mucosal disease.

Trauma in Root Canal Therapy — Wolfsohn²¹ has shown the beneficial

effect of hormonal treatment in root canal therapy in which the irritating chemical and resultant trauma due to reaming was controlled by the steroids.

Discussion

The steroids, corticotropin and cortisone, have proved effective in the treatment of rheumatoid diseases, pemphigus, allergic manifestations, lupus erythematosus, and many diseases of a systemic nature. In form of ointments or lotions hydrocortisone acetate has also proved effective in the treatment of gingival and dermatologic conditions. It is now demonstrated that fludrocortisone acetate when applied topically has served to impede inflammatory viral and gingival lesions of the oral mucosa. It has been proved that it is readily absorbed and definitely effective in combating many disease states. When massive dosages are required side reactions have been observed. In milder diseases treated with such low dosages as 0.1 to 0.25 per cent fludro-

¹⁸Sulzberger, M. B., and Rein, O. R.: Arch. Dermat. and Syph. 68:451 (Oct.) 1953.

¹⁹Goldfein, A. J.; Laidlaw, J. C.; Haybar N. A.; Renold, W. J.; and Thorn, G. W.: Fludrocortisone and Chlorhydrocortisone, Highly Potent Derivatives of Compound F, New England J. Med. 252:415-421 (Mar.) 1955.

²⁰Weisstein, L. M.: Topical Application of 9 Alpha-Fludrocortisone Acetate in the Treatment of Oral Inflammatory Diseases, Oral Surg., Oral Med., and Oral Path. 9:1080-1082 (Oct.) 1956.

²¹Wolfsohn, B. L.: The Role of Hydrocortisone in the Control of Apical Periodontitis, Oral Surg., Oral Med., and Oral Path. 7:314 (March) 1954.

TABLE I

Results of Treatment of Oral Disease with Topical Application of 0.25 per cent Fludrocortisone Acetate Over a Period of One Year

	Age Group	No. of Cases	Result of Treatment		
			Excellent	Good	Unimproved
Lichen Planus	(42-39)	2		1	1
Recurrent Aphthae	(17-52)	30	21	8	1
Herpes Simplex	(19-37)	12	7	4	1
Burns, Chemical and Food	(18-32)	2		2	
Denture sore mouths	(28-36)	3	1	2	
Cheilitis, Commissural	(21-48)	3	1	2	
Fissure, Lip	(20-36)	4	1	3	
Erythema Multiforme	(33)	3		1	2
Hyperkeratosis	(29-48)	2		2	
Leukoplakia	(32-57)			1	2

¹⁴Kylos, E. D.: Side Effects of Antibiotic Therapy, J. Am. Woman 6:470 (Dec.) 1951.

¹⁵Schwartz, J. H.: Moniliasis of the Mouth, Finger, Larynx and Vagina, J. Florida D. Soc. 2:17 (Jan.) 1949.

¹⁶Simpson, H. E.: Chronic Thrush, D. Practitioner 1:347 (July) 1951.

¹⁷Bergman, S. A.: Topical Application of Hydrocortisone Acetate in the Treatment of Aphthous Ulcers, DENTAL DIGEST 60:60 (Feb.) 1954.

cortisone acetate in a petroleum or lanolin base no untoward sequelae have been encountered except as described in Livingood's³ isolated case.

Summary

Some viral and other minor diseases of the oral cavity which have been refractory to treatment prior to the advent of fludrocortisone acetate therapy are discussed.

Gratifying results have been obtained in the treatment of minor

pathologic conditions of the oral cavity through the topical application of fludrocortisone acetate 0.25 per cent.

In 64 cases which included many herpetic lesions and aphthous ulcerations fludrocortisone acetate failed to give relief in 24 hours in only a few cases. This or similar acting agents should therefore be considered in the treatment of minor inflammatory lesions of the oral cavity.

U. S. Naval Receiving Station
496 Summer Street

Author's Note: Gratitude is expressed to Lyon P. Strean, D.D.S., Ph.D. for his helpful suggestions and constructive criticisms, and to Miss E. A. Dennis, Medical Librarian at the United States Naval Hospital, Chelsea, Massachusetts, for her assistance. The opinions or assertions stated here are the personal ones of the writer and are not to be construed as official or reflecting the views of the Navy Department or the naval services at large.

Influenza Threatens

EPIDEMIC influenza is on the march again. The epidemic in the Far East apparently started among refugees in Hong-Kong in the middle of April. Within a few weeks it has spread widely to other countries in Asia and has now reached India, Japan, and Siam. A laboratory report suggests that the virus is a new epidemic variant of influenza A, very different from previous epidemic varieties of this

virus. This finding has two implications: first, it is unlikely that any population will have specific immunity to the new virus; secondly, vaccine made from virus of the previous epidemic variety will probably not give much protection against the new variant. This country is unlikely to escape attack by this virus; but, since winter epidemics are the rule here, we may have a few months of respite.

If so, there should be an opportunity to prepare limited amounts of influenza vaccine with the new virus. So far the death-rate has been low; young children and old people seem to have been the hardest hit. There is at present no reason to fear that the epidemic will increase in virulence, but a careful watch will undoubtedly be kept for deaths among young adults.

From Annotations, *Lancet* No. 6980:1182 (June 8) 1957.

Psychosomatic Investigation

STANLEY COBB, M.D., Boston

Problems at All Levels

With a conviction as to the unity of the organism and a working theory as to what mind is, one can proceed to investigate specific psychosomatic problems. These problems exist at all levels and may be solved by correlating observations from any field of medicine with psychological observations. There

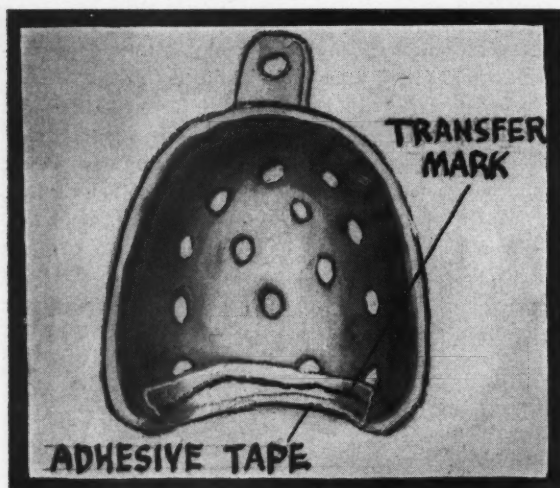
are many pertinent problems. What we need is clear thinking to choose important questions, and new methods which will give dependable data to explore the many unknown areas.

Purpose of Psychosomatic Medicine

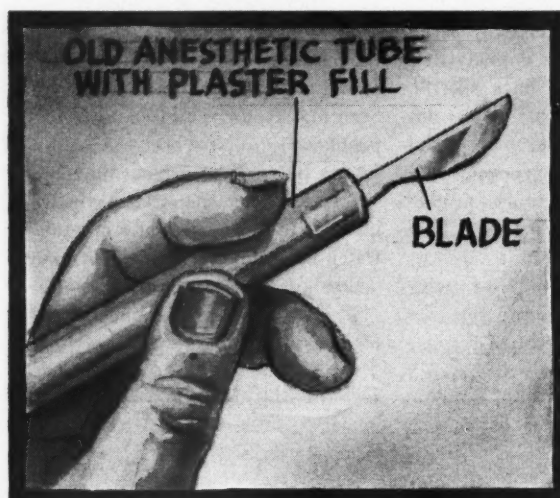
The aim of psychosomatic medicine

is to solve such problems and by solving them to eliminate itself. It came into existence because of a need to bring together rapidly growing bodies of knowledge. It will have served its purpose when physicians stop thinking of diseases as having specific causes, when they really conceive of both health and diseases as reactions of the human organism to a complex internal and external environment.

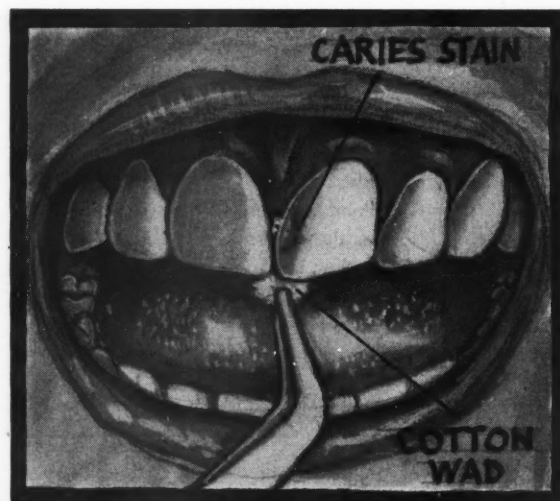
From Editorial, *Psychosomatic Medicine*, 19:178 (May-June) 1957.



1



2



3

Clinical and Laboratory

Determination of the Posterior Border of a Denture

Victor Kassel, D.D.S., Port Jervis, New York

1. Mark the junction of the hard and soft palate with an indelible pencil. Attach a strip of white adhesive to the posterior of the tray. When the impression is taken, the pencil mark will be recorded on the adhesive to show the posterior border.

A Laboratory Knife

C. F. Cappa, B.A., D.D.S., Byron, Ontario, Canada

2. Fill a discarded anesthetic tube with plaster and embed a discarded Bard-Parker surgical blade in the soft plaster. When the plaster is set, this makes an excellent knife for use in the laboratory.

A Test Preparatory to Placing Silicate

Walter M. Drozdiak, D.D.S., San Jose, California

3. Before placing a silicate restoration in an anterior tooth, tuck a wad of cotton in the cavity preparation. If any stained material remains in the cavity it will be shown upon this examination.

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SUGGESTIONS . . .

Storing Impressions

S. Traunstein, D.D.S., Brooklyn, New York

4. An alginate impression that cannot be poured promptly may be kept moist by wrapping it in plastic food-wrapping material (Saran Wrap).

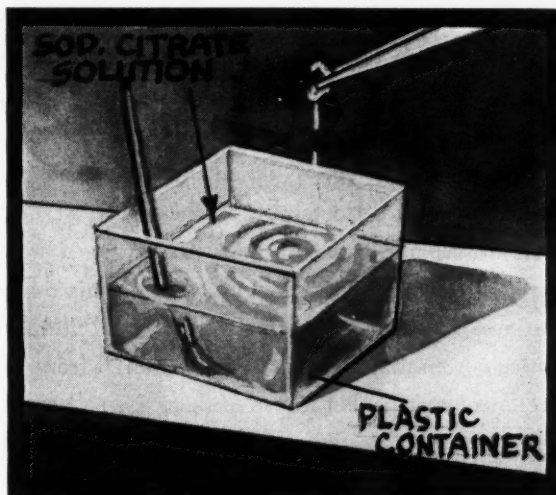


4

Dissolving Plaster and Investment Material

Harold Crandall, D.D.S., Salina, Utah

5. A saturated solution of sodium or potassium citrate may be used to remove plaster and investment material from inlays, dentures, jacket crowns, flasks, and other objects. The same solution is useful in removing investment from a sable or camel's hair brush.



5

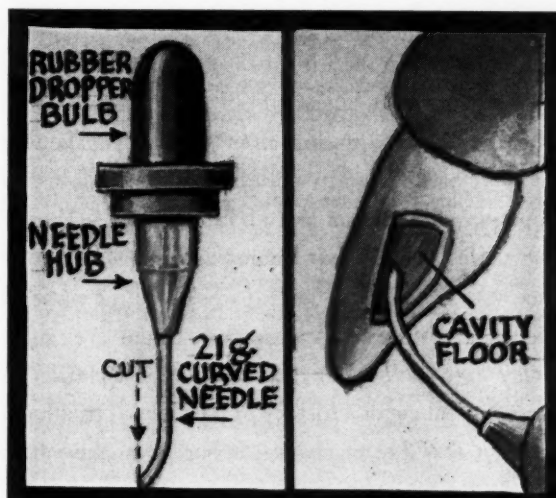
Needle Dropper for Applying Cavity Lining

John M. Stinnett, Capt. USAF (DC), Oklahoma City, Oklahoma

6. Curve a 21-gauge needle and cut off the tip. Attach a small size medicine dropper to the hub of the needle. This makes a useful instrument to apply cavity lining material.

technique involved; and jot down the advantages of the technique. This shouldn't take ten minutes of your time. Turn to page 327 for a convenient form to use.

Send your ideas to Clinical and Laboratory Suggestions Editor, DENTAL DIGEST, 708 Church Street, Evanston, Illinois.



6

The EDITOR'S Page

THIS is the day of emphasis on viral infections. Many of the cases of respiratory tract infections carry the virus label. There is increasing evidence that some cases of malignant disease are of viral origin. Infectious hepatitis and serum hepatitis are commonplace conditions of involvement of the liver by viruses.

Dentists must be particularly concerned with their techniques of sterilization of needles and syringes because of the danger that these instruments may be the carriers of viral hepatitis from one patient to another.

An editorial "Serum Hepatitis and Dental Injections" from the *British Medical Journal* gives this report and warning to dentists:¹

"During a two-year period from June, 1953, to May, 1955, fifty-seven patients were discharged from the General Hospital in Rochester, New York, with the diagnosis of viral hepatitis. Seven of these were known to have received blood or plasma transfusions. The remaining fifty patients would normally have been diagnosed as having suffered from infectious hepatitis, but fifteen of them gave a history of a dental injection within the preceding six months. In these fifteen patients there was no history of contact with a known case of infectious hepatitis, whereas there was such a history in six of the thirty-five patients who had no dental history. The incubation period in the fifteen cases varied from 47 to 142 days, with a mean of 96 days. The onset of illness was fairly gradual in most patients. The first symptoms were usually malaise, fatigue, and loss of appetite, with nausea and abdominal ache. The interval from the first symptoms to the onset of jaundice was usually one to two weeks. Three patients died with diffuse or focal necrosis of the liver cells. Foley and Gutheim suggest that the association of these patients with a history of past dental treatment was not just due to chance. Whereas in the whole

group of fifty patients with hepatitis included in this investigation fifteen (or 30 per cent) had a history of dental injections, in two other control groups of patients the frequency of dental injections was five to seven times less—4.4 per cent in one group of sixty-eight patients and 6 per cent in another group of fifty patients.

"These and other data which the authors give strongly suggest that dental injections must now be added to the list of injections which can be responsible for the transmission of virus hepatitis. Certainly the authors have established a case for careful investigation of this potential hazard. The risks of introducing infections by means of contaminated syringes or needles are not as widely appreciated as they should be. This is partly because many doctors [sic] and dentists are not aware of having had any trouble of this kind in their own practices, and if challenged on their technique for sterilizing syringes would point to the large numbers of injections they have given without any ill effects. But there is today an increased awareness that methods of sterilization both of syringes and of solutions frequently used in hospital and in general practice are far from safe. Foley and Gutheim recommend that chemical sterilization should be abandoned, and advise careful cleaning of syringes and needles and heat sterilization both of these and of procaine solutions. The days when every dentist will have his own small autoclave in his surgery may be some way off, but, if the risk of serum hepatitis suggested by Foley and Gutheim is confirmed by further investigation, then there will certainly be a case for overhauling the methods at present in use. The high mortality of serum hepatitis makes it a disease with which no chances must be taken."

In this day of high speed techniques and other refinements in dental procedures we need to take a close and critical look at some of our other methods: the sterilization of dental instruments.

¹British Med. J. No. 5019:636 (March 16) 1957.



Acute Cholecystitis— Surgery

Rarely is immediate or emergency surgery necessary at the onset of acute cholecystitis. The natural progress of the disease allows time to study the patients. Thus, those selected for operation can be properly prepared and operated on before secondary infection is established.

The majority of these patients are over 50 years of age. Early operation is favored because these persons are less able to tolerate the added stress of rapidly developing complications. In many instances, a patient appears to be recovering by medical management, only to have an acute exacerbation about ten days after the onset of the attack. Peritonitis and ileus are common in these patients. Surgery, therefore, is definitely justified as soon as infection is controlled and fluids and electrolytes are replaced.

Cholecystectomy is preferred and is generally accomplished with low morbidity and mortality. In cases with associated disease, safe exposure of the ducts and vessels is implemented by removal of the bladder from the fundus downward.

Cholecystostomy is preferred if risk of cholecystectomy is believed too great or when excision is hazardous to the common duct and adjacent vessels. Drainage is also done when the removal of the gallbladder would not be definitive or when a concomitant pancreatic lesion requires subsequent surgery.

Stone, Caleb S., and Wilhelm, M. C.: *Acute Cholecystitis, Nebraska M. J.* 40:415-420 (October) 1955.



Infants of Diabetic Mothers

The fetal loss in diabetic women before the institution of insulin therapy was about 50 per cent. Through meticulous management of the pregnancy and delivery and neonatal care of the baby this figure has been reduced to about 20 per cent.

MEDICINE

and the Biologic Sciences



Most intrauterine deaths occur in the last four to six weeks of pregnancy. Delivery of the diabetic woman four to five weeks before term is, therefore, desirable. In these patients cesarean section is often advisable because at least one third of infants will weigh 4,000 grams or more, the incidence of prolonged labor and breech position is increased and a ripe cervix is unlikely. Many times abnormal delivery is done when hypertension is associated, vascular disease has been demonstrated by fundoscopic examination, edema or hydramnios is increasing, diabetes has existed ten years or more or has been poorly controlled, pelvic measurements in proportion to the size of the baby are inadequate, or previous fetal loss has been recorded.

Placental suspension at the time of section may aid in preventing shock by allowing placental and cord blood to reach the infant. The maternal blood sugar should be maintained at normal levels at the time of delivery.

Prevention of respiratory complications in the infant is a primary consideration. Babies of diabetic mothers are peculiarly susceptible to hyaline membrane disease. In addition to the obstetrician, a physician who is

skilled in infant resuscitation should attend the delivery. The infant's head should be kept lower than the hips to lessen aspiration. If respirations are delayed, oxygen is administered immediately.

The baby should be placed in a special or observation nursery, even when far over premature weight. The infant usually behaves as though premature and should be treated accordingly. The most satisfactory means of preventing or treating hyaline membrane disease is provision of a heavily humidified (50 per cent oxygen) atmosphere for at least twenty-four hours. The baby is handled as little as possible.

Prophylactic antibiotics are given for respiratory difficulties since atelectasis and hyaline membrane disease are precursors of bronchopneumonia. In the early postnatal state, hypoglycemia is a definite hazard. Prolonged hypoglycemia may be related to anoxia, intracranial injury or adrenal hemorrhage.

Pennoyer, Miriam M., and Hartman, Alexis F.: *Management of Infants Born of Diabetic Mothers, Postgrad. Med.* 18:199-206 (October) 1955.



Poliomyelitis Vaccination

It is imperative that vaccines be prepared properly, and adequately tested. The solution to the technical problems of preparing polio vaccine safely, on a large scale, does not depend upon chance, but upon the proper understanding and application of the principles involved.

In the United States more than 6½ million children were inoculated with such vaccines without accident. The possibilities of hidden dangers due to an unknown and hypothetical Rh factor effect seem not to be demonstrable.

The prevention of paralysis is mediated through the action of antibody. A procedure, therefore, highly efficient in inducing formation of antibodies is correspondingly effective in preventing paralysis.

The effects of the successive inoculations are cumulative. Ideally, the first two doses should be spaced four weeks apart. This may be reduced to not less than two weeks if two doses are to be given when the polio season is imminent or after the season has begun. The third dose should be administered before the polio season that follows, and preferably six to seven months, or even longer, after the second dose.

Some of the early vaccines were poorly antigenic. Therefore children who received these would not get a booster effect from subsequent doses. There are no indications of any trend suggesting a significantly lesser ability of younger children to react immunologically. After a suitable course of vaccination, it would be expected that a protective effect would be evident in children under age six, as well as in children age six and above.

It is poor judgment to rely upon a single inoculation when the desired objective is complete protection for all who are inoculated. The second inoculation is intended to help approach the goal of full protection. The third dose is intended to help minimize further the chance of any subject escaping at least some degree of vaccine effect. When a third dose is given 7 months or longer after the completion of the primary series, the chances for achieving this objective are considerably enhanced. The purpose of the third dose, when administered seven months or longer after the two primary doses, is that of inducing a degree of antibody response corresponding to the degree of the response after a natural infection. It is still too early to know whether artificial immunization produces a lifelong immunity.

Salk, Jonas, Poliomyelitis Vaccination, Current M. Digest 23:71-76 (March) 1956.



Suicidal Risk

A previous attempt at self-destruction must be viewed seriously when

evaluating suicidal risk. Depressed patients frequently try again. Factors involved in a suicide attempt may be of prognostic importance in differentiating the hysterical type of gesture from the serious one that failed. Also, the means employed in the attempt may attest to the seriousness.

A patient's expression of suicidal intent should never be dismissed as simply an attention-getting device. As many as 40 per cent of suicides announce the intention. If the attempt fails, the patient may try to allay concern and thus prevent interference of the second try.

A patient with recent depression should be observed with particular caution. Formerly it was thought that groundless depressions were the main causes of suicide. Now, factors generally recognized as causes are loss of employment, financial reverses, disappointment in love, grief over an ailing child, or threatened exposure of a misdeed.

Recent heavy or unusual drinking is reason for observation, since deeply depressed patients sometimes drink to relieve the discomfort associated with an unrecognized depression. The symptoms of such a depression may include unaccustomed difficulties in talking with people, fatigue, restlessness, and apprehension.

The patient's mental status provides clues regarding an existing tendency to suicide. All agitated depressions point to potential suicide risks. Depressive stupors signify less immediate danger. States of acute panic may lead to serious attempts at self-destruction. Morbid thoughts centering around baseless self-accusation may suggest suicidal intention.

Physical examination may provide further clues. Transverse scars on the flexor surface of the wrist or linear scars about the neck are usually evidence of a previous suicide attempt.

Direct questioning of the patient suspected of suicidal intentions is essential. Deferment for fear of giving the patient the idea is hazardous. The most reassuring reply is a qualified denial. A plain negative reply in an

obviously depressed patient is of little value. A flood of self-accusations or expressions of hopelessness released by direct questioning should be viewed as a veiled admission of intent.

Frank, Ludwig M., and Hurley, Thomas J.: Evaluation of the Suicidal Risk, Connecticut M. J. 19:305-308 (October) 1955.



Diabetes— Foot Lesions

Diabetic patients with foot lesions should receive conservative treatment with frequent drainage of infected areas. Prolonged hospitalization may be necessary, but major amputation is often avoided.

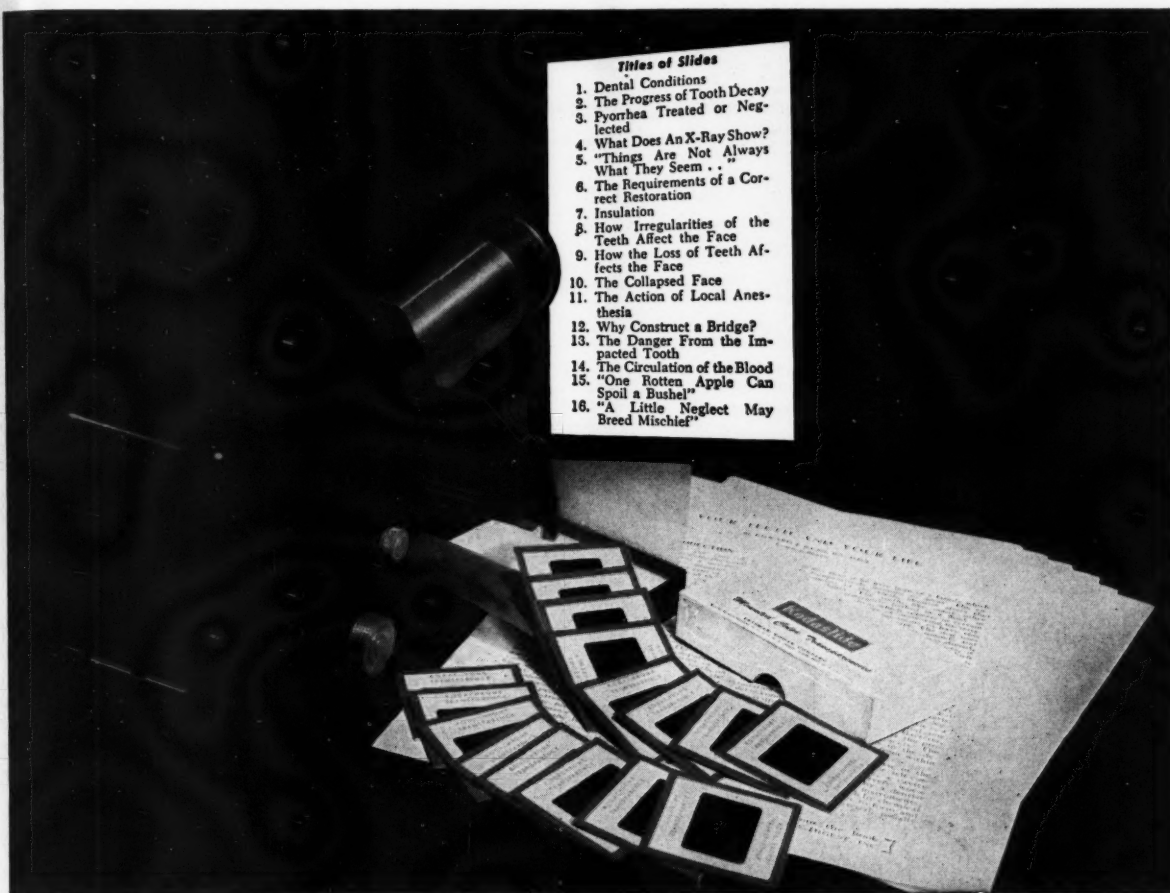
Gangrene may be controlled by conservative management with minor amputations. Results are less favorable, however, than when infection is the predominant factor. All patients with foot infections, even if the lesion is slight, should be hospitalized and examined completely to detect other complications. A high-protein diet is prescribed.

Good control of diabetes is essential. The urine should be as close to sugar-free as possible without provoking hypoglycemia. The patient often requires much more than the usual dose of insulin when infection occurs.

Cultures and sensitivity studies are obtained from the infected areas and appropriate antibiotics are given. If the lesion is not open, 600,000 to 1,000,000 units of penicillin should be given daily.

Infected areas should be drained widely within twenty-four hours of admission. Local accumulations of pus can be drained early as are comparable lesions of nondiabetic persons, because spread of infection is rare after antibiotic therapy is begun.

After initial drainage, the foot is inspected every day since other pockets are often detected. Several trips to the operating room for incision and drainage may be necessary. Sometimes one or more digits or



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metatarsals must be removed and after the infection has subsided, healing is often rapid.

High amputations are not done for infections of the feet unless conservative treatment has been tried for two weeks, and then are rarely necessary.

Gangrene must be differentiated from necrotic slough caused by infection. Excision of a toe may be adequate for persons with gangrene, but a transmetatarsal or a higher amputation is frequently required. A high amputation should be below the knee if the patient has good popliteal pulsations and can use a prosthesis. Lumbar sympathectomy is not recommended as a routine procedure for foot lesions associated with diabetic arteriosclerotic disease.

Hurwitz, David: Management of Lesions of the Feet in Diabetes, Diabetes 4:107-109 (October) 1955.



Traumatic Injury to the Ear

Blows to the head often result in fairly predictable types of fractures and otologic disturbances depending upon the contour and consistency of the skull. The foramina of the petrous bone act as areas of stress concentration and fracture lines in the vicinity may extend toward the foramina.

Temporal, parietal, occipital, and frontal blows are commonly associated with fractures of the temporal bone. Transverse fractures of the petrous bone with severe injury to the eighth cranial nerve usually involve the internal acoustic meatus resulting in loss of cochleovestibular function. Often the seventh nerve is transected.

Most patients with craniocerebral injuries present signs or symptoms of fracture or concussion. These include tinnitus, vertigo, deafness, headaches, unconsciousness, audiometric hearing loss, abnormal caloric test, spontaneous nystagmus, positional nystagmus, deformities of the external ear canal and drum, roentgenographic evidence of fracture, and facial nerve paresis or paralysis.

A careful examination of the external ear canal and drum should be

made as soon after the injury as possible because signs of fracture and other injury may be transient.

Slight bleeding from the ear after a head injury may be from a laceration within the external auditory canal or from rupture of the tympanic membrane. Profuse hemorrhage is generally caused by injury to a large vein or artery. Ecchymosis may appear over the mastoid area on the fourth or fifth day after injury.

Patients with bleeding ears or otor-

rhea should be given sulfonamides and antibiotics to prevent infection, particularly meningitis. Skull fractures, especially those of the temporal bone, are accompanied by a high incidence of hearing loss. The loss is most severe for the tones between 3,000 and 8,000 cycles. Conductive lesions in hearing tend to resolve, but perceptive lesions frequently do not.

Tinnitus, true vertigo, and dizziness are common after head injury. The dizziness consequent to head trauma

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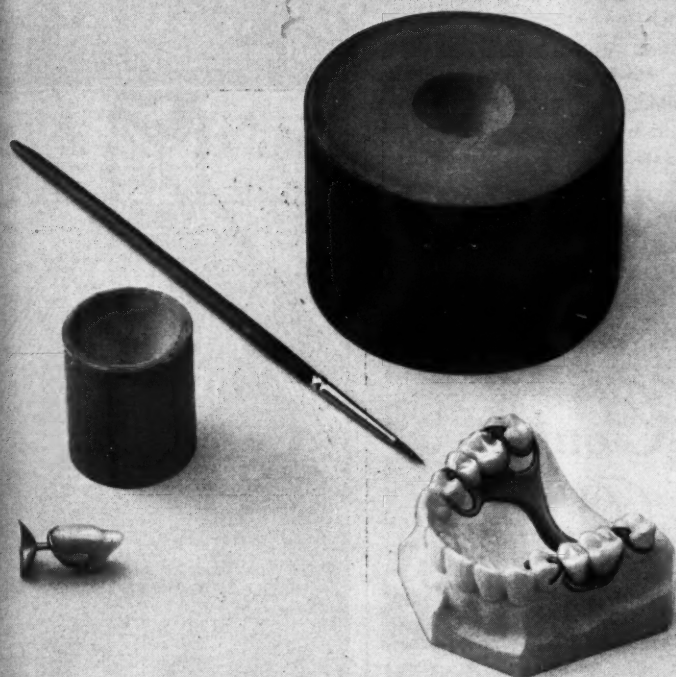


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is usually positional in character, varies in severity, and usually disappears after a few weeks. Recovery of nerve function almost always ensues in patients with facial paralysis due to closed injuries of the head. Facial paralysis persisting longer than three months usually improves somewhat. With persistent paralysis, surgery should be considered for cosmetic reasons. Direct injury to the peripheral nerve should be repaired immediately if possible.

Proctor, Bruce; Guardjian, E. S., and Webster, John E.: *The Ear in Head Trauma, Laryngoscope* 66:16-58 (January) 1956.



Dermatoses

Many of the eruptions treated are those arising from "overtreatment." The patient who cuts, bruises or burns

himself is sometimes treated by a physician but more often he has been given well-meaning advice by a nurse, a friend, or a pharmacist. In such circumstances, the patient does not improve but an acute erythematous and vesicular eruption frequently develops from the applied medication. This is termed "overtreatment dermatitis."

An acute dermatitis occurs when new lesions continue to develop although the rash may have been of long standing. Thus, although a patient may have had psoriasis for a long time, if new lesions develop within a month or so of the examination, he has what is known as acute psoriasis and must be treated for an acute dermatitis.

As a practical matter, then, the application of such medication as mercury, tar, and chrysarobin, which for years have proved of value in psoriasis, will most certainly result in disaster if applied to the lesions of acute psoriasis.

A dermatitis is chronic when the patient has had for a long time lesions which have been unchanging and when no new lesions have developed for a period of two or three months. These patients are rarely seen, especially when the rash does not get worse.

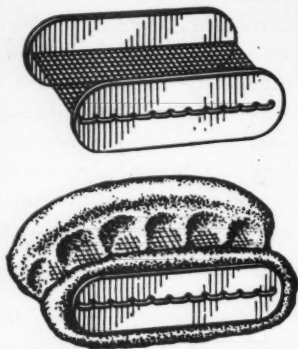
Most contact dermatoses are acute since the patient usually has a red or vesicular eruption. The medication to be used in general are: (1) baths, (2) compresses, (3) powders, and (4) lotions.

In a condition of generalized eruption, cold or cool starch, or vinegar baths allay itching and cool the skin. Starch baths are made by mixing 2 cups of cornstarch with cold water to form a paste. Two quarts of boiling water are then added and the mixture is poured into a cool bath. The patient should sit in the tub for 10 to 15 minutes and allow the starch water to run all over the body. The person should dry himself by patting, not rubbing.

If the eruption is more localized, cool or cold compresses (not dressings) may be used along with cool baths. Compresses which contain sodi-

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um chloride or boric acid in a 1 to 2 per cent solution are helpful.

Dusting powders are useful in treating acute dermatoses. Such powders cool and protect the skin. Lotions may be of some value. However, there is danger that they may be applied too thickly, thereby defeating the purpose for which they are prescribed. Calamine lotion is the one most used.

Oral administration of antihistamine tablets may or may not relieve itching. A trial of a few days is worth while.

Morris, George E.: Contact Dermatoses from Everyday Exposures, Current M. Digest 23:81-84 (February) 1956.

Contra- Angles



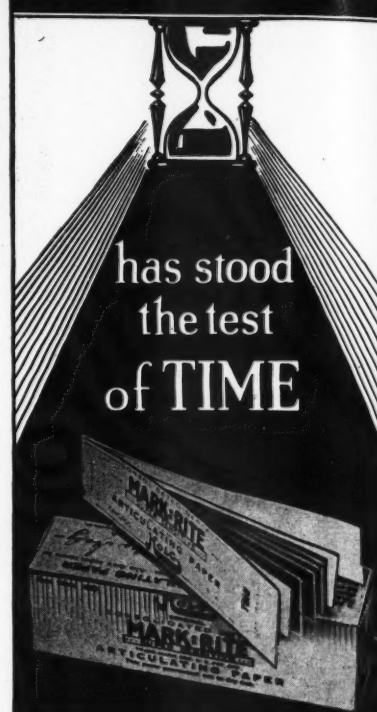
Readings on a Rainy Day

The small light fingers of rain are strumming on the roof. The birds are quiet in shelter. It is a good day to be indoors.

Three of the best medical journals in the world are here before me. They are packed with valuable material that reflects the imagination, the scholarship, the enterprise of dozens of dedicated men and women. This day the unusual items, the off-beat points of view, attract my interest.

The *New England Journal of Medicine* in its 130th year of publication reflects the fine conservatism of its origin. The editorial pages of this journal express more than cold, detached, scientific objectivity. These editors often write with a warm human touch that glows and sparkles. They know and feel that medicine is more than a scientific discipline; it is an art that touches the lives of people. The frenzies and the tensions that people live under are as important in the evaluation of disease as

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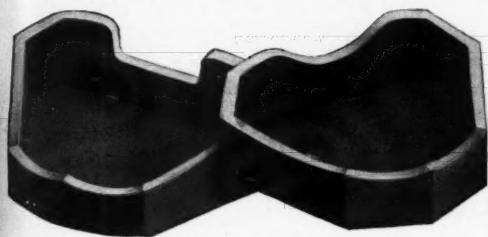
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are the bacterial and biochemical irritants that attack human beings.

On the subject of "Scientific Relaxation" the editors of *The New England Journal* write with keen awareness that relaxation is a mental discipline more than it is a pharmaceutical habit. Although the tranquilizing drugs have a place in modern life they are not a substitute for the tranquility that comes from good habits of mind and soul. High-pressure salesmanship, desk-pounding



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executives, frenzied scurrings about, mixing business with meals are some of the violations against serenity and are important causes of disease.

"There is a current concept that any matter of business, to be considered as important, must not wait; that iron must be struck while it is hot, regardless even of whether any future use for it has been established. Impetuosity and inconvenience are signs of this concept of importance—impetuosity on the part of the aggressor, initiating his business by long-distance telephone, usually from New York or St. Louis, and inconvenience on the part of the victim, rudely snatched from his concentration on matters that may seem of importance to him, to make a statement or a decision for which he is at the moment unprepared . . .

"There is only one way of handling the formidable aggressor-executive (aggressutive, to save valuable time) who works with three telephones on his desk and it is relatively simple. The prospective victim should entrench himself behind a fixed policy of always saying, 'No,' over the telephone, with the suggestion that a letter be written stating the request fully and clearly. The aggressutive may take the next plane, but at least it gives time for reflection.

"Many thoughtful persons are in favor of tranquility but prefer to achieve it through some physiologic means rather than by gulping down a scoopful of tablets. They are those who avoid the use of bullying practices and prefer not to be bullied. They favor the courteous, if not the

CLINICAL AND LABORATORY SUGGESTIONS

(See pages 318 and 319)

Form to be Used by Contributors

To: Clinical and Laboratory Suggestions Editor

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*For minimal prophylactic measures against subacute bacterial endocarditis, see "Accepted Dental Remedies, 1957," p. 63, published by the American Dental Association.

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genial, approach. They cherish minor inconsistencies, secure in the belief that there are two or more sides to many questions, which can be viewed in rotation, and that black and white often blend into various shades of gray. They find time for harmless inefficiencies like collecting pieces of string too short to tie and sharpening their own lead pencils."

The second selection from readings on this rainy day is from *The Lancet*, the British medical publication that is older by five years than *The New England Journal of Medicine*.

This item concerns sleep. Most of us have believed that the waking state is the natural condition for human beings and that sleep is a temporary interruption of the normal waking. The British writer takes the contrary view that "Sleep is the original and basic state of life. Wake is a temporary disturbance of the sleeping state."

"Throughout fetal and very early baby life of sleep, wake is but a briefly temporary cessation of the sleeping state. We certainly could not say that the sleep of this period was a temporary cessation of the waking state.

"But what of the later stages of life? As development proceeds, this clear-cut pattern alters profoundly. We find in the growing baby that the polyphasic waking episodes are prolonged. In the young child they gradually merge together into a triphasic and then a biphasic pattern, and finally, with the abolition of the afternoon nap, there is one long monophasic wake period. With growing age this increase until the waking hours (sixteen or more) exceed the hours of sleep (eight or less). This long daily vigil continues for many years, but with increasing age there is a gradual return to the baby pattern. The afternoon nap of 'forty winks' (usually after food) is the first sign of the return of biphasic wake, and in old age triphasic and polyphasic modes are found. In extreme senility there is sometimes a return to the almost perpetual sleep of the fetus, and it may be that the arousal stimuli disappear from life

in the reverse order of their appearance . . .

"This conclusion provides a firm foundation for the further study of the physiology and pathology of wake. It entirely reorients the problem of insomnia, the secret of which lies not in the study of sleep but in that of wake (especially the wake maintainers). In particular the acceptance of this basic view of sleep should be of fundamental help to sufferers from agrypnophobia, and the 'threat' nature of arousal underlines the importance of anxiety in the maintenance of unwanted wake.

"The importance of insomnia and dyssomnia in the production of unhappiness and ill health cannot be exaggerated. It is along the lines described above that we shall reach a solution of the problem."

The third item is from *The Journal of the American Medical Association* and like relaxation and sleep concerns another fundamental biologic subject—food.

Most of us eat too much. The 3000 calories a day recommended by the National Research Council for an active adult male are too many. "The thin rats bury the fat rats" is a fact that has been observed by laboratory workers. The same principle seems to apply to human beings. Over-nutrition or obesity are dangerous to everybody, particularly when we pass middle life at age 40.

The JAMA report is on a study made in Spain among a group of elderly persons.

"Starting with a review of the result of experiments in animals with the hunger diets, as reported by American investigators, Arias Vallejo made observations with the hunger diet in the elderly. The experimental observations lasted 3 years. One hundred twenty persons of either sex who lived in a residential home for the elderly were observed. The persons were over 75 years of age and were healthy. They were placed in 2 groups of 60 persons each (the group of the experiment and the control group). The experimental group received a diet consisting of 2,300 calories (50 grams of proteins and 40 grams of

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fat) on alternate days; on the other day they consumed only 1 liter of milk and 500 grams of fresh fruit. Persons in the control group received a diet consisting of 2,300 calories (50 grams of proteins and 40 grams of fat) every day. At the end of 3 years the number of days on which persons in either group had reported to the hospital department of the home was twice as great for persons in the control group as for those who were on the hunger diet. The incidence of cardiovascular disease, malignant neoplasms, congestive cardiac insufficiency, and bronchitis were

more than twice as high for the persons in the control group. The death rate in general and the frequency of myocardial infarction and congestive cardiac insufficiency as the cause of death were over twice as high for the controls as for the persons on the hunger diet. The results of the experimental observation showed that the hunger diet on alternate days maintains a feeling of well-being in the elderly and prolongs the health and life span."

Now that this pleasant literary task is over I can, like Horace, "return to my little farm and my woodlands that

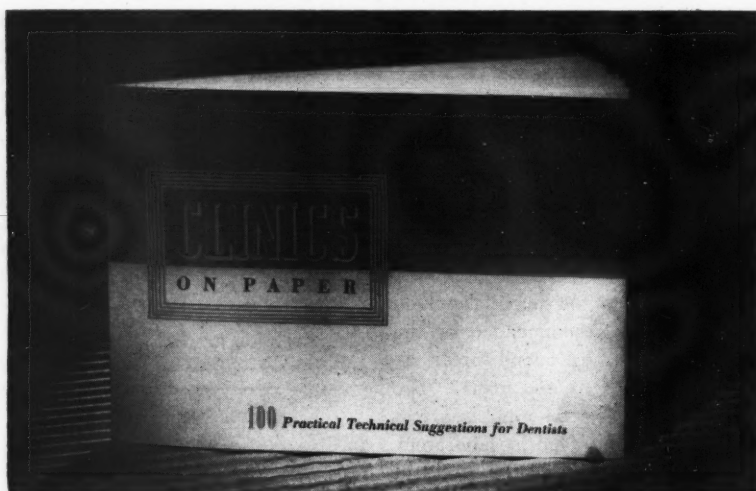
restore me to myself." The rain has ended.

Dentists Who See More Than Teeth

In the field of facial and body reconstruction by prostheses there have been some dedicated men in the dental profession. My dear and deceased friend John Fitz-Gibbon of Holyoke, Massachusetts knew from the suffering of firsthand experience the plight of the person born with a cleft palate. He spent his life and his energies devising obturators. He has an exemplary follower in Gaylord James of Cleveland. Cloyd Harkins of Osceola Mills, Pennsylvania has performed wondrous things for others of those born with palatal defects. By his vigorous enterprise Herbert Cooper of Lancaster, Pennsylvania has established a cleft palate clinic that is a credit to him and to the dental profession. Soon he will announce a revolutionary development for those poor souls who have lost their speech from cancer. Alfred Nelson of Royal Oak, Michigan has given new noses, ears, and hands to the unfortunate. Phelps Murphey of Dallas, Texas while serving in the U. S. Navy Dental Corps demonstrated that an artificial eye need not be a grotesque and frightening replacement. Arthur Bulbulian of the Mayo Clinic has spent his professional lifetime in the rehabilitation of the maimed and deformed from all parts of the world. There are other dentists in the nation who have also turned their skills to the restoration of the afflicted and the unfortunate.

At a recent meeting of the Illinois State Dental Society I saw a scientific exhibit and visited with another dedicated young dentist, A. C. Fonder, who labors in this important field of rehabilitation. He, with other earnest colleagues, has arranged an intensive course to be presented in August. We are happy to have the opportunity to publish this announcement:

A two-week course in facial and surgical prosthetics will be conducted August 12 to 24 by the Sterling-Rock Falls Prosthetic and Rehabilitation Center, Rock Falls, Illinois. This non-



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Volume 4 of *Clinics On Paper* was welcome news to many of the 5000 dentists who had purchased each of the three previous volumes. Since its introduction only a few months ago hundreds have purchased Volume 4 to complete their file of this valuable material. *None of its 100 suggestions appeared in the preceding volumes.*

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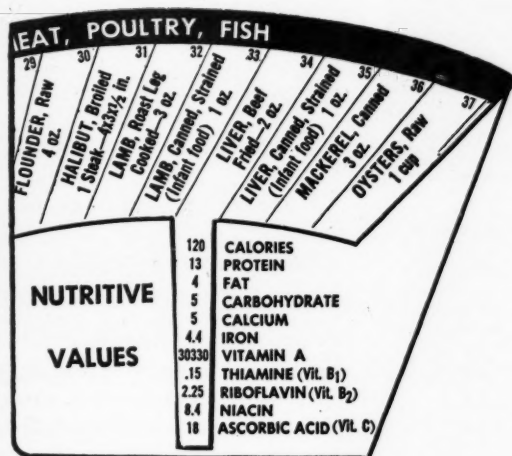
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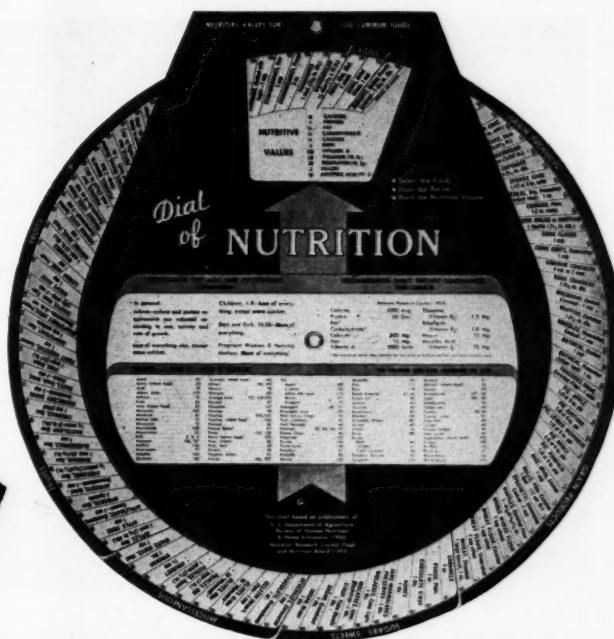
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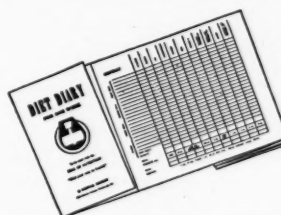
With diet the popular subject of newspaper columns, magazine articles, lectures, and books, the average layman is rapidly becoming nutrition-conscious. Unfortunately, he is also becoming nutrition-confused.

You can help the patient who is groping for food-facts (as well as the one whose dental or general health indicates a definite dietary deficiency) by recommending the simple and accurate DIAL-DIARY method of checking food intake in terms of nutritional needs.

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The DIET DIARY is a convenient folder in which each item of food eaten at, or between, meals is recorded for the period of one week. The nutritional components of each food are determined by consulting the DIAL, and then entered in the proper spaces on the DIARY page. At the end of the day, or the end of the week, totals are checked against recommended dietary allowances. (All figures on the DIARY and the DIAL are those determined by the U. S. Department of Agriculture and the National Research Council.)



Gaining proper nutritional balance by correcting obvious nutritional deficiencies is then merely a matter of intelligent selection of food—and, again, the DIAL OF NUTRITION is a dependable and convenient guide. Three DIET DIARIES are sent with each DIAL OF NUTRITION.

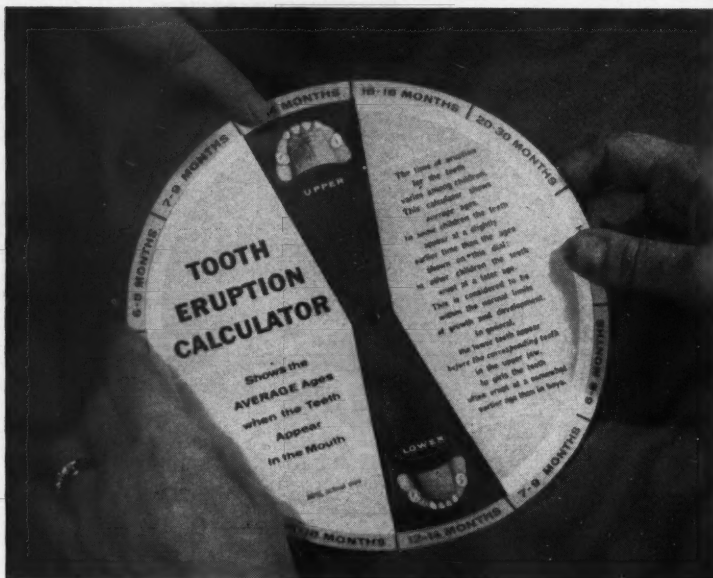
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profit research and treatment foundation for patient care and the education and training of dentists in the prosthetic replacements of missing parts of the anatomy presents short courses for the teacher and practitioner as well as longer courses and residency training.

This staff for the summer course will include: A. Alfred Nelson, D.D.S., guest instructor, and A. C. Fonder, D.D.S., staff member, who will teach the prosthetic restoration of ears, noses, and parts of the face, using both soft and hard materials; Benjamin Hoffman, D.D.S., Veterans

Hospital, Brooklyn, New York, guest instructor, whose subject will be surgical implants and intraoral appliances to rehabilitate the handicapped; and other prominent representatives in allied fields. Movies, slides, lectures, and demonstrations will be used as teaching adjuncts and the total approach will be practical with emphasis on the "how-to-do-it" procedure.

Accommodations may be reserved in air-conditioned hotel rooms and motels for individual dentists or for dentists and their families. Camping facilities are also available. Classes

will be held mornings and evenings, leaving afternoons free for recreation.

For additional information and reservations address: The Executive Director, Sterling-Rock Falls Prosthetic and Rehabilitation Center, 303 West 2nd Street, Rock Falls, Illinois.

For those dentists who see their fellow man in his sufferings from congenital defects, with his structure destroyed by malignant disease, with his face and body mutilated by accidents, a course like this should be the opportunity to learn to serve in a wider field.

E.J.R.

Sophistication of Modern Food

CHEMICAL sophistication is not akin to the processes of home cooking and food preparation, though that argument is sometimes offered by chemists defending chemical sophistication. The home practices have grown up through centuries and have been tested in the lives and health of countless millions of young and old and sick and well persons, whereas the new chemical procedures are young in the history of the race, and their potentialities for ill are as yet hardly touched by the few persons really qualified and skilled in this difficult field of research. As was well said by Doctor James R. Wilson, a distinguished medical expert of broad training and experience, and Secretary of the American Medical Association's Council on Foods and Nutrition: "One good hard-working chemist can create more problems than ten toxicologists can solve—and we don't have that many toxicologists."

From *Consumers' Research Bulletin* (January) 1954.